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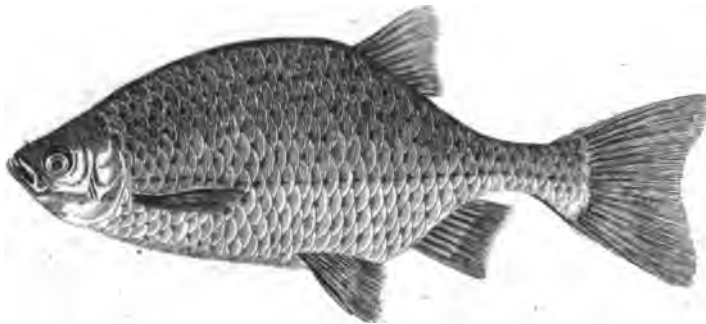
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BRITISH ZOOLOGY.

CLASS III. REPTILES

IV. FISH.



Nº 172.

L O N D O N.
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M D C C L X X V I.

BRITISH ZOOLOGY.

V O L. III.

CLASS III. REPTILES.

IV. FISH.

WARRINGTON:

Printed by WILLIAM EYRES,

F O R

BENJAMIN WHITE, at Horace's Head, Fleet-Street, LONDON.

MDCCLXXVI.

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C L A S S I I I .

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R E P T I L E S .

All the works of the LORD are good, and he will give every needful thing in due season.

So that a man cannot say this is worse than that, for in time they shall all be well approved.

ECCLESIASTICUS XXXIX. 33, 34.

R E P T I L E S.

WE are now to consider the class of Reptiles, which are, for the most part, objects of detestation; but however the opinion of the world may be, if a writer undertakes a general history of animals, he must include them: they form at least one link in the chain of beings, and may therefore be viewed with a degree of pleasure by a philosophic eye.

But notwithstanding the prejudice against this class is almost universal, is it founded on reason? In some it may be owned that the outward form is disagreeable, while the noxious qualities of others are justly productive of terror: but are we on that account to reject them? The more fatal they are, the more deeply we should enquire into their effects, that we may be capable of relieving those who are sufferers, and secure others from the same misfortune. But if we duly weigh their noxious qualities, we shall, with our moral poet, find

" All partial evil universal good."

The teeth of wild beasts, and of serpents, are not only created as instruments of vengeance, but are salutary in lessening the

B 2

numbers

R E P T I L E S.

numbers of those animals which are highly useful in the degree, and only hurtful in their excess; but if their bad qualities are serviceable, we are more indebted to their good ones than we chuse to acknowledge.

But many of the animals that form this class are of immediate benefit to mankind. The Turtle, or Sea-Tortoise, supplies the torrid zone with a wholesome and delicious food, as the epicures of our own country can attest. Frogs are a food in several parts, as Lizards and Serpents are in others.

The medicinal virtues of the Viper are partly exploded by the moderns, but time, the overthrower of systems, as well as empires, may restore it to the rank it held with the antients. The *Lacerta Scincus* is, however, yet esteemed in the *East* for its salubrious qualities, and even Toads have contributed to the ease of patients in the most inveterate of all diseases.

Had I followed *Linnaeus*, and included the Cartilaginous Fish in this class, there would have been ample room for panegyric, for it is very doubtful whether any are pernicious; but the uses of many, either as food or for mechanical purposes, were never questioned.

But if the external figure of the reptile tribe is disgusting, they have one general beauty, an apt configuration of parts for their way of life, nor are they destitute of their peculiar graces: the fine disposition of plates in the shell of the Tortoise, with the elegant symmetry of their colors, must strike even common observers, while the eye of the despised Toad has a lustre denied to more pleasing forms. The frolicsome agility of Lizards enlivens the dried banks in hot climates; and the great affection which some of
them

R E P T I L E S.

5

them shew to mankind, should farther engage our regard and attention.

The wreathing of the snake, with the vivid die of its skin, are certainly graceful, tho' from the dread of some particular species which are venomous, we have acquired an antipathy for the whole. The antients, who considered the Serpent as an emblem of health, could associate pleasing ideas with this animal. We therefore find it an ornament at every entertainment, and in every scene of mirth, both in painting and in sculpture. *Virgil* adopted this notion, and has accordingly described it with every beauty both of form and color,

*Adytis cum lubricus anguis ab imis
Septem ingens gyros, septena volumina traxit;
Amplexus placidè tumulum, lapsusque per aras:
Cærulea cui terga notæ, maculosus et auro
Squamam incendebat fulgor, cœu nubibus arcus
Mille trahit varios adverso sole colores.*

V. 84.

From the deep tomb, with many a shining fold,
An azure serpent rose, in scales that flam'd with gold:
Like heaven's bright bow his varying beauties shone
That draws a thousand colors from the sun:
Pleas'd round the altars and the tomb to wind,
His glittering length of volumes trails behind.

PITT.

But

R E P T I L E S.

But if after all some lively writers should pursue the Naturalists with more wit than argument, and more humor than good-nature, it should be endured with patience. Ridicule is, however, not the test of truth, tho' when joined to satyr, it seldom fails of seducing the many who would rather laugh than think. Should this prove the case in the present instance, let the author be allowed to screen himself from censure, by saying he writes not to the many, but the few; to those alone who can examine the parts with a view to the *whole*, and who scorn to despise even the most deformed, or the most minute work of an all-wise CREATOR.

G E N E R A.

- I. TORTOISE.
- II. FROG.
- III. LIZARD.
- IV. SERPENT.

Pl I.

Nº 1.

CORIACEOUS TORTOISE.



C L A S S III.

R E P T I L E S.

Body covered either with a shell or strong hide, divided by sutures;
four fin-like feet; a short tail.

I.
TORTOISE.

<i>Testudo coriacea</i> five <i>Mercurii</i> . <i>Rondel.</i>	<i>cauda angulis septem exaratis. Lin.</i>	I. CORIACE-
450? <i>Gesner pisc.</i> 946?	<i>syf.</i> 350.	OUS.
<i>Testudo coriacea?</i> <i>Testudo pedibus</i>	<i>Turtles. Berlast Cornwall, 285. Plate</i>	
<i>pinniformibus naticis, testa coriacea,</i>	27.	

THIS species is common to the *Mediterranean*, and to our southern seas, and is not, as far as we know, discovered in any other.

Two were taken on the coast of *Cornwall* in the mackrel nets, of a vast size, a little after *Midsummer* 1756; the largest weighed eight

CORIACEOUS TORTOISE. CLASS III.

eight hundred pounds, the lesser near seven hundred. A third, of equal weight with the first, was caught on the coast of *Dorsetshire*, and deposited in the *Leverian Museum*.

The length of the body is four feet ten inches ; of the head nine inches and a half ; of the neck three ; or of the whole five feet twelve. The upper jaw bifurcated at the end : the extremity of the lower sharp, clasping into the fork of the upper. The nostrils small and round.

The breadth of the body in the largest part is three feet. The length of the fore fins two feet seven : of the hind thirteen inches and a half : are smooth, grow pointed to the extremity, and are destitute of toes. These fins are stuffed : perhaps the bones might have been taken out ; for in the figure given by *Rondeletius*, which agrees in all other respects with this species, there is appearance of toes, and even nails.

The body is covered with a strong hide, exactly resembling black leather, destitute of scales, but marked with the appearance. The back is divided into five longitudinal flutings or grooves, with as many sharp but smooth risings.

This species is said to be extremely fat : but the flesh coarse and bad *, according to the report made by writers who had opportunity of tasting them in the *Mediterranean* sea. I am informed that the *Carthusians* will eat no other than this species.

* *Rondeletius. Boffuet.*

Body

Body naked.

Four legs, the feet divided into toes.

No tail.

II.
FROG.

Batrax ♂. *Arist. Hist. an. Lib. IV.*

c. 9.

La Grenouille. Belon poissons, 48.

Rana fluviatorum. Rondel. 217.

Rana aquatica innoxia. Gesner quad.

ovip. 46. Aquatil. 805.

Rana aquatica. Raii syn. quad. 447.

Wasser Frosche. Meyer an. I. Tab. 52.

Rana temporaria. R. dorso planiusculo

subangulato. Lin. syst. 357.

Groda, Fro, Klaffa. Fann. Suec. No.

102.

Rana. Gronov. Zooph. No. 62.

2. COMMON.

SO common and well-known an animal requires no description; but some of its properties are so singular, that we cannot pass them unnoticed.

Its spring or power of taking large leaps is remarkably great, and it is the best swimmer of all four-footed animals. Nature hath finely adapted its parts for those ends, the fore members of the body being very lightly made, the hind legs and thighs very long, and furnished with very strong muscles.

While in a tadpole state, it is entirely a water animal; the work of generation is performed in that element, as may be seen in every pond during spring; when the female remains oppressed by the male for a number of days.

The work of propagation is extremely singular, it being certain that the frog has not a *penis intrans*; there appears a strong analogy

GENERA-
TION.

in this case between a certain class of the vegetable kingdom and those animals; for it is well known, that when the female frog deposits its spawn, the male instantaneously impregnates it with what we may call a *farina facundans*, in the same manner as the male *Palm* tree conveys fructification to the flowers of the female, which would otherwise be barren*.

As soon as the frogs are released from their tadpole state, they immediately take to land; and if the weather has been hot, and there fall any refreshing showers, you may see the ground for a considerable space perfectly blackened by myriads of these animalcules, seeking for some secure lurking places. Some philosophers† not giving themselves time to examine into this phænomenon, imagined them to have been generated in the clouds, and showered on the earth; but had they, like our *Derbam*‡, but traced them to the next pool, they would have found a better solution of the difficulty.

As frogs adhere closely to the backs of their own species, so we know they will do the same by fish: *Walton* § mentions a strange story of their destroying pike; but that they will injure, if not entirely kill carp, is a fact indisputable, from the following relation: a very few years ago, on fishing a pond belonging to Mr. *Pit*, of *Encomb*, *Dorsetshire*, great numbers of the carp were found each with a frog mounted on it, the hind legs clinging to the back, the fore legs fixed in the corner of each eye of the fish, which were thin and greatly wasted, teized by carrying so disagreeable a

* *Shaw's Travels*, 224. *Hasselquist Trav. Engl. Ed.* 416.

† *Rondeletius*, 216. *Wormii Mus.* 327.

‡ *Ray's Wisdom Creat.* 316. § *Complete Angler*, 161.

load.

CLASS III. COMMON FROG.

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load. These frogs we imagine to have been males disappointed of a mate.

The croaking of frogs is well known, and from that in fenny countries they are distinguished by ludicrous titles, thus they are stiled *Dutch Nightingales* and *Boston Waites*; even the *Stygian* frogs have not escaped notice, for *Aristophanes* hath gone farther, and formed a chorus of them.

Βρεκεκέξ, κοάξ, κοάξ,
Βρεκεκέξ, κοάξ, κοάξ,
Λιμναῖα κρηνῶν τέσσα *

Brekekex, coax, coax,
Brekekex, coax, coax,
The offspring of the pools and fountains.

Yet there is a time of year when they become mute, neither croaking nor opening their mouths for a whole month: this happens in the hot season, and that is in many places known to the country people by the name of the *Paddock Moon*. I am informed that for that period, their mouths are so closed, that no force (without killing the animal) will be capable of opening them.

PERIODICAL
SILENCE.

Morton† endeavours to find a reason for their silence, but tho' his facts are true, he is unfortunate in his philosophy. Frogs are certainly endued (as he well observed) with a power of living a good while under water without respiration, which is owing to their lungs being composed of a series of bladders: but he mistakes the nature of air, when he affirms that they receive a quantity of cool air, and dare not open their mouths for a month, from a dread

* *Comedy of the Frogs.*

† *Hist. Northampt.* 441.

of admitting a warmer into their lungs. It is hardly necessary to say, that in whatever state the air was received, it would assimilate itself to the external atmosphere in a short time. We must leave the fact to be accounted for by farther experiments. But from what we do know, we may partly vindicate *Theophrastus*, and other antients, about the silence of the frogs at *Scriphus*. That philosopher affirms it, but ascribes it to the coldness of the waters in that island: Now when Monsieur *Tournefort* was there, the waters were lukewarm, and the frogs had recovered their voices*. Is it not probable that *Theophrastus* might be at *Scriphus* at that season when the frogs were mute, and having never observed it elsewhere, might conclude their silence to be general as to the time, but particular as to the place. *Ælian*†, who quotes *Theophrastus* for the last passage, ascribes the same silence to the frogs of the lake *Pierus* in *Theffaly*, and about *Cyrene* in *Africa*: but he is so uncertain a writer, that we cannot affirm whether the species of the *African* frogs is the same with ours.

Food. These, as well as other reptiles, feed but a small space of the year. The food of this genus is flies, insects, and snails. Toads are said to feed also on bees, and to do great injury to those useful insects.

: During winter frogs and toads remain in a torpid state: the last of which will dig into the earth, and cover themselves with almost the same agility as the mole.

* *Tournefort's voy.* I. 142.

† *Ælian, Lib. III. ch. 35, 37.*

Rana gibbosa. *Gesner pisc.* 809.
Rana esculenta. *Lin. syst.* 357. *Faun.*
Succ. No. 279.

R. corpore angulato, dorso transverse 3. EDIBLE.
gibbo, abdomine marginato. *Ibid.*

THIS differs from the former in having a high protuberance in the middle of the back, forming a very sharp angle. Its colors are also more vivid, and its marks more distinct; the ground color being a pale or yellowish green, marked with rows of black spots from the head to the rump.

This and, we think, the former, are eaten. We have seen in the markets at *Paris* whole hampers full, which the venders were preparing for the table, by skinning and cutting off the foreparts, the loins and legs only being kept. Our strong dislike to these reptils, prevented a close examination into the species.

Φυρ. *Arist. Hist. an. lib. ix. c. I.* *Bufo rubetorum.* *Klein quad.* 122.
 40. *Rana Bufo.* *R. corpore ventricoso,*
Bufo. *Virg. Georg. I. 184.* *Rubeta.* *verrucoso luzido fuscoque.* *Lin. syst.*
Plin. lib. VIII. c. 31. 354-
Rubeta sc. Phrynum. *Gesner pisc.* 807. *Padda, Tassa. Faun. succ.* No. 275.
Rondel, 222. *Gronov. Zooph.* No. 64.
Bufo five Rubeta. Raii syn. quad. 252.

4. TOAD.

THE most deformed and hideous of all animals; the body broad, the back flat, and covered with a pimply dusky hide; the belly large, swagging, and swelling out; the legs short, and its

its pace labored and crawling : its retreat gloomy and filthy : in short, its general appearance is such as to strike one with disgust and horror ; yet we have been told by those who have resolution to view it with attention, that its eyes are fine : to this it seems that *Shakespeare* alludes, when he makes his *Juliet* remark,

Some say the lark and loathed toad change eyes.

As if they would have been better bestowed on so charming a songster than on this raucous reptile.

But the hideous appearance of the toad is such as to make this one advantageous feature overlooked, and to have rendered it in all ages an object of horror, and the origin of most tremendous inventions. *Ælian* * makes its venom so potent, that *Basilisk*-like, it conveyed death by its very look and breath ; but *Juvenal* is content with making the *Roman* ladies, who were weary of their husbands, form a potion from its intrails †, in order to get rid of the good man.

Occurrit Matræna potens, quæ molle Calenum
Porrectura viro miscet sitiente rubetam. *Sat.* I. 68.

To quench the husband's parching thirst, is brought
By the great Dame, a most deceitful draught ;
In rich *Calenian* wine she does infuse,
(To ease his pains) the toad's envenom'd juice.

This opinion begat others of a more dreadful nature ; for in

* *Hist. an. lib. ix. c. 11.*

† *Sat. vi. 658. Vide Ælian Hist. an. lib. xvii. c. 12. and 15.*

after-

after-times superstition gave it preternatural powers, and made it a principal ingredient in the incantations of nocturnal hags :

Toad that under the cold stone,
Days and nights has, thirty-one,
Swelter'd venom sleeping got,
Boil thou, *first* i'th' charmed pot.

We know by the poet that this charm was intended for a design of the first consideration, that of raising the dead from their repose, and bringing before the eyes of *Macbeth* a hateful second-sight of the prosperity of *Banquo's* line.

This shews the mighty powers attributed to this animal by the dealers in the magic art ; but the powers our poet indues it with, are far superior to those that *Gesner* ascribes to it : *Shakespeare's* witches used it to disturb the dead ; *Gesner's*, only to still the living, *Ut vim coeundi ni fallor, in viris tolleret* *.

We may add here another superstition in respect to this animal : it was believed by some old writers to have a stone in its head, fraught with great virtues medical and magical : it was distinguished by the name of the Reptile, and called the *Toad-Stone*, *Bufo-nites*, *Croapaudine*, *Krottenstein* † ; but all its fancied powers vanished on the discovery of its being nothing but the fossil tooth of the *sea-wolf*, or of some flat-toothed fish, not unfrequent in our island, as well as several other countries ; but we may well excuse this tale, since *Shakespeare* has extracted from it a simile of uncommon beauty :

TOAD-
STONE.

* *Hist. quad. ovip.* 72.

† *Boet. de Boot. de Lap. et Gem.* 301. 303.

Sweet

Sweet are the uses of adversity,
Which, like the toad, ugly and venomous,
Wears yet a precious jewel in his head.

But these fables have been long exploded: we shall now return to the notion of its being a poisonous animal, and deliver, as our opinion, that its excessive deformity, joined to the faculty it has of emitting a juice from its pimples, and a dusky liquid from its hind parts, is the foundation of the report.

That it has any noxious qualities we have been unable to bring proofs in the smallest degree satisfactory, though we have heard many strange relations on that point.

On the contrary, we know several of our friends who have taken them in their naked hands, and held them long without receiving the least injury: It is also well known that quacks have eaten them, and have besides squeezed their juices into a glass, and drank them with impunity.

NOT POISON-
OUS.

We may say also, that these reptiles are a common food to many animals; to *buzzards*, *owls*, *Norfolk plovers*, *ducks*, and *snakes*, who would not touch them were they in any degree noxious.

So far from having venomous qualities, they have of late been considered as if they had beneficent ones. We wish, for the benefit of mankind, that we could make a favorable report of the many attempts of late to cure the most terrible of diseases the *cancer*, by the application of live toads; but, alas, they seem only to have rendered a horrible complaint more loathsome. My enquiries on this subject, and some further particulars relating to the history of this animal, may be found in the Appendix.

In

In a word, we may consider the toad as an animal that has neither good nor harm in it; that being a defenceless creature, nature had furnished it, instead of arms, with a most disgusting deformity, that strikes into almost every being capable of annoying it, a strong repugnancy to meddle with so hideous and threatening an appearance.

The time of their propagation is very early in the spring: at that season the females are seen crawling about oppressed by the males, who continue on them for some hours, and adhere so fast as to tear the very skin from the parts they stick to. They spawn like frogs; but what is singular, the male affords the female obstetrical aid, in a manner that will be described in the Appendix.

To conclude this account with the marvellous, this animal is said to have often been found in the midst of solid rocks, and even in the centre of growing trees, imprisoned in a small hollow, to which there was not the least adit or entrance*: how the animal breathed, or how it subsisted (supposing the possibility of its confinement) is past our comprehension. *Plot's*† solution of this phenomenon is far from satisfactory; yet as we have the great *Bacon's*‡ authority for the fact, we do not entirely deny our assent to it.

GENERA-
TION.

* *Plot's Hist. Staff.* 247.

† *P.* 249.

‡ *Nat. Hist. Cent. vi. Exp.* 570.

5. NATTER JACK. *Rana Rubeta?* *Lin. syst.* 355. *Faun.* *R. corpore verrucoso, ano obtuso subturn.*
Succ. No. 101. *punctato. Ibid.*

THIS species frequents dry and sandy places: it is found on Putney Common, and also near *Revesby Abby, Lincolnshire*, where it is called the *Natter Jack*. It never leaps, neither does it crawl with the slow pace of a toad, but its motion is liker to running. Several are found commonly together, and, like others of the genus, they appear in the evenings.

The upper part of the body is of a dirty yellow, clouded with brown, and covered with porous pimples, of unequal sizes: on the back is a yellow line.

The upper side of the body is of a paler hue, marked with black spots, which are rather rough.

On the fore feet are four divided toes; on the hind five, a little webbed.

The length of the body is two inches and a quarter; the breadth, one and a quarter: the length of the fore legs one inch one-sixth; of the hind legs, two inches.

We are indebted to *Joseph Banks, Esq.* for this account.

INHABITS

INHABITS the woods near *Loch Ransa*, in the *Isle of Arran*.

6. GREAT.

Is double the size of the common frog: the body square: belly great: legs short: four toes on the fore-feet, four and a thumb to the hind; the second outmost toe the longest. The color above, is a dirty olive, marked with great warty spots; the head alone plain. The color beneath whitish.

It leaped slowly.

D 2

Slender

III.
LIZARD.

Slender naked body : four legs :
Divided toes on each :
Very long tail.

7. SCALY. *Lacertus terrestris lutea squamosa anglica. Raii syn. quad.* 264. *Odla, Fyrfot. Faun. Suec. No.* 284.
Plot's Hist. Staff. 252. *tab.* 22. *Lacerta, Gronov. Zooph. No.* 60.
Lacerta agilis? L. cauda verticillata longiuscula squamis acutis, collari subtus squamis constructo. Lin. syst. 363. *Little Brown Lizard. Edw.* 225.
Padzher pou. Berlese Cornwall, 284. tab. 28.

THOSE we have seen differ in color, but agree in all other respects with the species described by Doctor *Plot*. Their length from the nose to the hind-legs was three inches; from thence to the end of the tail three and three quarters.

Along the back was a black list; each side of that a brown one: then succeeded a narrow stripe, spotted alternately yellow and brown; beneath that a broad black one; those ended a little beyond the hind-legs. The belly was yellow, and the scales large but even. The scales on the back small; on the tail the ends projected: those on the latter were varied with black and brown.

The legs and feet were dusky; on each foot were five toes, furnished with claws.

This species is extremely nimble: in hot weather it basks on the sides

PL. II.

BROWN LIZARD.



Fig. 1.

SCALY LIZARD.



Fig. 2.

W. H. L. & Co. London.

CLASS III. S C A L Y L I Z A R D.

21

sides of dry banks, or of old trees ; but on being observed immediately retreats to its hole.

The food of this species, as of all the other *English* lizards, is insects : they themselves of birds of prey. Each of our lizards are perfectly harmless ; yet their form is what strikes one with disgust, and has occasioned great obscurity in their history.

Related to this species is the *Guernsey* lizard, which we are informed has been propagated in *England* from some originally brought from that island. We have also heard of a green lizard frequent near *Farnham*, which probably may be of that kind : but the most uncommon species we ever met [with any account of, is that which was killed near *Woscot*, in the parish of *Swinford*, *Worcestershire*, in 1741, which was two feet six inches long, and four inches in girth. The fore-legs were placed eight inches from the head ; the hind-legs five inches beyond those : the legs two inches long : the feet divided into four toes, each furnished with a sharp claw. Another was killed at *Penbury*, in the same county. Whether these are not of exotic descent, and whether the breed continues, is what we are at present uninformed of.

OTHER
SPECIES.

Lacertus

8. WARTY. *Lacertus aquaticus*. *Gesner quad. ovip.* Skroq-abborre, Gruffgrabbe. *Fama*
 31. *Succ.* No. 281.
Salamandra aquatica. *Raii syn. quad.* *Lacerta Americana*. *Seb. Mus. I. tab.*
 273. 89. fig. 4, 5.
Lacerta palustris. *L. cauda lanceolata* *Salamandra alepidota verrucosa*. *Gro-*
mediocri, pedibus muticis palmis te- *nov. Zooph.* No. 47.
tradactylis. *Lin. syst.* 370.

THE length of this species was six inches and an half, of which the tail was three and a quarter.

The irides yellow: the head and beginning of the back flat, and covered with small pimples or warts, of a dark dusky color; the sides with white ones: the belly, and the side of the tail, was of a bright yellow; the first spotted with black.

The tail was compressed sideways, and very thin towards the upper edge, and slender towards the end.

The fore-feet divided into four toes; the hind into five; all without nails, dusky spotted with yellow:

Its pace is slow and crawling.

This species we have frequently seen in the state we describe, but are uncertain whether we ever met with it under the form of a *larve*. We have more than once found under stones and old logs, some very minute young lizards that had much the appearance of this kind: they were perfectly formed, and had not the least vestiges of fins; so that circumstance, joined to their being found in a dry place, remote from water, makes us imagine them to have
 never

P. III.

II.



II.



No 8.

I WARTY LISARD.



CLASS III. BROWN LIZARD.

26

never been inhabitants of that element, as it is certain many of our lizards are in their first state.

At that period they have a fin above and below their tail; that on the upper part extends along the back as far as the head, but both drop off as soon as the animal takes to the land, being then no longer of any use.

Besides these circumstances that attend them in form of a *larve*, Mr. *Ellis* * has remarked certain pennated fins at the gills of one very common in most of our stagnating waters, and which is frequently observed to take a bait like a fish.

Lacertus vulg. terrestris ventre nigro
maculato. *Raii syn. quad.* 264.
L. vulgaris. L. cauda tereti medio-
cri, pedibus unguiculatis, palmis

tetradactylis, dorso linea duplici 9. BROWN.
fusca. Lin. Syst. 370. *Faun. Suec.*
No. 283.

THIS is three inches long: the body slender; the tail long, slightly compressed, small and taper; that and the upper part of the body of a pale brown, marked on each side the back with a narrow black line reaching to the end of the tail: the belly of a pale yellow, marked with small dusky spots; the toes formed like those of the preceding.

* *Phil. Tran.* Vol. LVI. P. 191.

Lacertus

10. LITTLE.

Lacertus parvus terrestris fuscus oppido rarus. Raii syn. quad. 264.

THIS species is mentioned by Mr. Ray in his list of the *English* lizards, without any other description than is comprehended in the *synonym*.

11. AN-
GUINE.

Lacertus terrestris anguiformis in ericetis. Raii syn. quad. 264.

WE remain also in the same obscurity in respect to this species. It seems to be of that kind which connects the serpent and lizard genus, having a long and very slender body, and very small legs. Such are the *Seps*, or *Lacerta Chalcidica* of *Raii syn. quad. 272*, the *Lacerta anguina* of *Linnaeus, 371*, or that figured by *Seba, tom. ii. tab. 68.* under the name of *Vermis serpentiformis*.

Long

PL. IV.

Nº 12.



VIPER.

Nº 15.



BLIND WORM.

Nº 19.



RINGED SNAKE.

Long and slender bodies, covered with scaly plates :
No feet.

IV.
SERPENT.

**Exx. Arist. Hist. an. lib. iii. c. 1.*

Vipera. Virg. Georg. iii. 417. Plinii,
lib. x. c. 42.

Vipera. Gesner Serp. 71.

Viper, or Adder. Raii syn. quad. 285.

Bovl. Corn. 282. tab. 28.

Coluber Berus. Lin syst. 377. Hugg-
orm Faun. Suec. No. 286. C. Berus
scutis abdom. 146. squamis caudæ.
39. Ibid.

Amæn. Acad. I. 527.

12. VIPER.

VIPERS are found in many parts of this island, but the dry, stony, and, in particular, the chalky countries abound with them. They swarm in many of the *Hebrides*.

They are viviparous, not but that they are hatched from an internal egg; being of that class of animals, of whose generation *Aristotle* * says, *Εν αυτοις μὲν ὥσπερ τὸ τέλειον ὄν, ἐξω δὲ ζωοτοκεῖ, ἰ. ε.* They conceive a perfect egg within, but bring forth their young alive.

Providence is extremely kind in making this species far from being prolific, we having never heard of more than eleven eggs being found in one viper, and those are as if chained together, and each about the size of a blackbird's egg.

The viper grows seldom to a greater length than two feet, though once we saw a female (which is nearly a third larger than the male) which was almost three feet long.

* *De Gen. an. Lib. III. c. 2.*

DESCRIP. The ground-color of this serpent is a dirty yellow ; that of the female deeper. Its back is marked the whole length with a series of rhomboid black spots, touching each other at the points ; the sides with triangular ones ; the belly entirely black.

There is a variety wholly black ; but the rhomboid marks are very conspicuous even in this, being of a deeper and more glossy hue than the rest. *Petiver* calls it the *Vipera Anglica Nigricans*. *Pet. Mus.* No. 204 *.

TEETH. The head of the viper is inflated, which distinguishes it from the common snake. The tongue forked ; the teeth small ; the four canine teeth are placed two on each side the upper jaw : these instruments of poison are long, crooked, and moveable, and can be raised and depressed at pleasure ; they are hollow from near the point to their base, near which is a gland that secretes, prepares, and lodges the poison ; and the same action that gives the wounds, forces from this gland, through the tooth, the fatal juice into it.

These islands may be particularly thankful for the blessing they enjoy, in being possessed of only one venomous animal, and that of a kind which encreases so little.

They copulate in *May*, and are supposed to be about three months before they bring forth.

They are said not to arrive at their full growth in less than six or seven years ; but that they are capable of engendering at two or three.

We have been often assured by intelligent people of the truth of a fact mentioned by Sir *Thomas Brown* †, who was far from a cre-

* *Coluber Prester. Lin. syst.* 377. *Bosc. Faun. Susc.* No. 287.

† *Vulgar errors*, 114.

dulous writer, that the young of the viper, when terrified, will run down the throat of the parent, and seek shelter in its belly in the same manner as the young of the *oppossum* retire into the ventral pouch of the old one.

From this some have imagined that the viper is so unnatural as to devour its own young; we disbelieve the fact, it being well known that the food of these serpents is frogs, toads, lizards, mice, and, according to Doctor *Mead*, even an animal so large as a mole. These they swallow entire; which, if we consider the narrowness of their neck, shews it is capable of a distension hardly credible, had we not ocular proofs of the fact.

FOOD.

It is also said, from good authority, that they will prey on young birds; whether on such as nestle on the ground, or whether they climb up trees for them as the *Indian* serpents do, we are quite uncertain; but we are well assured that this discovery is far from a recent one:

*Ut affidens implumibus pullis avis
Serpentium allapsus timet*.*

Thus, for its young the anxious bird
The gliding serpent fears.

The viper is capable of supporting very long abstinence, it being known that some have been kept in a box six months without food, yet did not abate of their vivacity. They feed only a small part of the year, but never during their confinement; for if mice, their favorite diet, should at that time be thrown into their box, tho' they will kill, yet they never will eat them.

* *Hor. Epod. I.*

E 2

The

The poison decreases in violence in proportion to the length of their confinement: it must be also added, the virtues of its flesh (whatsoever they be) are at the same time considerably lessened.

These animals, when at liberty, remain torpid throughout the winter; yet when confined have never been observed to take their annual repose.

The method of catching them is by putting a cleft stick on or near their head; after which they are seized by the tail, and put instantly into a bag.

The viper-catchers are very frequently bit by them in the pursuit of their business, yet we very rarely hear of the bite being fatal. The remedy, if applied in time, is very certain, and is nothing else but sallad oil, which the viper-catchers seldom go without. The *axungia viperina*, or the fat of vipers, is also another. Doctor *Mead* suspects the efficacy of this last, and substitutes one of his own in its place*; but we had rather trust to vulgar receipts which perpetual trials have shewn to be infallible.

EFFECTS OF
ITS BITE.

The symptoms of the venom, if the wound is neglected, are very terrible: it first causes an acute pain in the place affected, attended with a swelling, first red, afterwards livid, which by degrees spreads to the neighboring parts; great faintness, and a quick tho' low and interrupted pulse ensue; great sickness at the stomach, bilious convulsive vomitings, cold sweats, and sometimes pains about the navel; and in consequence of these, death itself. But the violence of the symptoms depends much on the season of the year, the difference of the climate, the size or rage of the animal, or the depth or situation of the wound.

* *Essay on Poisons*, 47.

Dreadful

Dreadful as the effects of its bite may be, yet its flesh has been long celebrated as a noble medicine. Doctor *Mead* cites from *Pliny*, *Galen*, and other antients, several proofs of its efficacy in the cure of *ulcers*, the *elephantiasis*, and other bad complaints. He even says he has seen good effects from it in an obstinate *lepra*: it is at present used as a restorative, tho' we think the modern physicians have no great dependence on its virtues. The antients prescribed it boiled, and to be eaten as fish; for when fresh, the medicine was much more likely to take effect than when dried, and given in form of a powder or troche. Mr. *Keyser* relates that Sir *Kenelm Digby* used to feed his wife, who was a most beautiful woman, with capons fattened with the flesh of vipers.

USES.

The antient *Britons* had a strange superstition in respect to these animals, and of which there still remains in *Wales* a strong tradition. The account *Pliny* gives of it is as follows: we shall not attempt a translation, it being already done to our hands in a spirited manner by the ingenious Mr. *Mason*, which we shall take the liberty of borrowing.

Præterea est ovorum genus in magna Galliarum fama, emissum Græcis. Angues innumeri æstate convoluti, salivæ faucium corporumque spumæ artificii complexu glomerantur; anguinum appellatur. Druidæ sibilis id dicant in sublime jactari, sagoque oportere intercipi, ne tellurem attingat: profugere raptorem equo: serpentes enim insequi, donec arceantur amnis alicujus interventu.*

* *Lib. XXIX. c. 3.*

But

But tell me yet
 From the grot of charms and spells,
 Where our matron sister dwells,
Brennus, has thy holy hand
 Safely brought the Druid wand,
 And the potent *Adder-stone*,
 Gender'd 'fore the autumnal moon ?
 When in undulating twine,
 The foaming snakes prolific join ;
 When they hiss, and when they bear
 Their wond'rous egg aloof in air ;
 Thence before to earth it fall,
 The *Druid* in his hallow'd pall,
 Receives the prize,
 And instant flies,
 Follow'd by the envenom'd brood,
 'Till he crosses the crystal flood *.

This wondrous egg seems to be nothing more than a bead of glass, used by the *Druids* as a charm to impose on the vulgar, whom they taught to believe, that the possessor would be fortunate in all his attempts, and that it would gain him the favor of the great.

Our modern *Druidesses* give much the same account of the *ovum anguinum*, *Glain Neidr*, as the *Welsh* call it, or the *Adder-Gem*, as the *Roman* philosopher does, but seem not to have so exalted an opinion of its powers, using it only to assist children in cutting their teeth, or to cure the chin-cough, or to drive away an ague.

We have some of these beads in our cabinet: they are made of

† *Mason's Carabacus*. The person speaking is a *Druid*.

glass,

glass, and of a very rich blue color; some are plain, others streaked: we say nothing of the figure, as the annexed plate will convey a stronger idea of it than words.



Ενδορίς. *Arist. Hist. an.* I. c. 1.

Natrix torquata. *Gesner Serpent.* 63.

Natrix torquata. *Raii syn. quad.* 334.

Anguis vulgaris fuscus collo flavescente,
ventre albis maculis distinctus. *Pet.*

Mus. XVII. No. 101.

Coluber natrix. *Lin. syst.* 380.

Tomt-Orm, Snok, Ring-Orm. *Faun.*
Succ. No. 288.

C. natrix scutis abdom. 170. *Squamis*
caudæ, 60. *Ibid.*

13. RINGED.

THE snake is the largest of the *English* serpents, sometimes exceeding four feet in length: the neck is slender; the middle of the body thickest; the back and sides covered with small scales, the belly with oblong, narrow, transverse plates. The first
Linnaeus

Linnaeus distinguishes by the name of *squamæ*, the last he calls *scuta*, and from them forms his genera of serpents.

Those that have both *squamæ* and *scuta* he calls *Colubri*; those that have only *squamæ*, *Angues*. The viper and snake are comprehended in the first genus, the blind-worm under the second; but we chuse (to avoid multiplying our genera) to take in the few serpents we have by a single genus, their marks being too evident to be confounded.

DESCRIP.

The color of the back and sides of the snake are dusky or brown; the middle of the back marked with two rows of small black spots running from head to tail; and from them are multitudes of lines of spots crossing the sides; the plates on the belly are dusky, the scales on the sides of a bluish white.

On each side the neck is a spot of pale yellow, and the base of each is a triangular black spot, one angle of which points towards the tail.

The teeth are small and serrated, lying each side the jaw in two rows.

This species is perfectly inoffensive; it frequents and lodges itself among bushes in moist places, and will readily take the water, swimming very well.

It preys on frogs, insects, worms, and mice, and, considering the smallness of the neck, it is amazing how large an animal it will swallow.

EGGS.

The snake is oviparous: it lays its eggs in dung-hills, and in hot-beds, whose heat, aided by that of the sun, promotes the exclusion of the young.

During winter it lies torpid in banks of hedges, and under old trees.

Anguis

Anguis Eryx. Lin. fyst. 392.
A new Snake. Tour in Scotl. 1769. App.

14. ABER-
 DEEN.

LENGTH fifteen inches. Tongue broad and forked. Nostrils small, round, and placed near the tip of the nose. Eyes lodged in oblong fissures above the angle of the mouth. Belly of a bluish lead color, marked with small white spots irregularly disposed. The rest of the body of a greyish brown, with three longitudinal dusky lines, one extending from the head along the back to the point of the tail; the others broader, and extending the whole length of the sides. It had no *scuta*; but was entirely covered with small scales; largest on the upper part of the head.

Inhabits *Aberdeenshire*. Communicated to me by the late Doctor *David Skene*.

<p>The Blind-worm, or slow-worm, <i>Cæcilia Typhlina</i> Græcis. <i>Raii syn. quad. 289. Grew's Mus. 48.</i> <i>Cæcilia anglica cinerea squamis parvis mollibus, compactis. Pet. Mus. xvii. No. 102.</i></p>	<p>Long Cripple. <i>Borlase Cornw. 284. tab. 28.</i> <i>Anguis fragilis. Lin. fyst. 392.</i> <i>Ormsla, Koppar-Orm Faun. Suec. 289.</i> <i>A. fragilis squamis abdominis caudæque, 135. Ibid.</i></p>	<p>15. BLIND- WORM.</p>
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THE usual length of this species is eleven inches: the irides are red; the head small; the neck still more slender; from that part the body grows suddenly, and continues of an equal bulk to the tail, which ends quite blunt.

DESCRIP.

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F

The

The color of the back is cinereous, marked with very small lines composed of minute black specks; the sides are of a reddish cast; the belly dusky, both marked like the back.

The tongue is broad and forked; the teeth minute, but numerous; the scales small.

The motion of this serpent is slow, from which, and from the smallness of the eyes, are derived its names. Like others of the genus, they lie torpid during winter, and are sometimes found in vast numbers twisted together.

Like the former it is quite innocent. Doctor *Borlase* mentions a variety of this serpent with a pointed tail; and adds, that he was informed that a man lost his life by the bite of one in *Oxfordshire*. We are inclined to think that his informant mistook the black or dusky viper for this kind; for, excepting the viper, we never could learn that there was any sort of poisonous serpent in these kingdoms.

In *Sweden* is a small reddish serpent, called there *Asping*, the *Columber Cbersea* of *Linnaeus*, whose bite is said to be mortal. Is it possible that this could be the species which has hitherto escaped the notice of our naturalists? I rather suspect it, as I have been informed, that there is a small snake that lurks in the low grounds of *Galloway*, which bites and often proves fatal to the inhabitants.

C L A S S

C L A S S IV.

F I S H.

Ob Deus ! ampla tuæ, quam sunt miracula dextræ !

O quam solerti singula mente regis !

Divite tu gazâ terras, et messibus imple ;

Nec minus est vasti fertilis unda maris :

Squammiger hunc peragrat populus, prolesque parentum

Stipat, et ingentes turba minuta duces.

JONSTON. PSALMUS CIV.

F I S H.

DIV. I. CETACEOUS FISH.

NO gills; an orifice on the top of the head, thro' which they breathe, and eject water; a flat or horizontal tail; exemplified in the explanatory plate, *fig. 1.* by the BEAKED WHALE, borrowed from *Dale's Hist. Harw. 411. Tab. 14.*

G E N E R A.

- I. WHALE.
- II. CACHALOT.
- III. DOLPHIN.

DIV. II. CARTILAGINOUS FISH.

BREATHING thro' certain apertures, generally placed on each side the neck, but in some instances beneath, in some above, and from one to seven in number on each part, except in the PIPE FISH, which has only one.

The muscles supported by cartilages, instead of bones.

Explan. Pl. *fig. 2.* the PICKED DOG FISH.

a. The lateral apertures.

IV. L A M-

F I S H.

- IV. LAMPREY.
- V. SKATE.
- VI. SHARK.
- VII. FISHING FROG.
- VIII. STURGEON.
- IX. SUN FISH.
- X. LUMP FISH.
- XI. PIPE FISH.

D I V. III. B O N Y F I S H.

THIS division includes those whose muscles are supported by bones or spines, which breathe thro' gills covered or guarded by thin bony plates, open on the side, and dilatable by means of a certain row of bones on their lower part each separated by a thin web, which bones are called the *Radii Branchioستي*, or the *Gill-covering Rays*.

The tails of all the fish that form this division, are placed in a situation perpendicular to the body, and this is an invariable character.

The later Ichthyologists have attempted to make the number of the branchiostegous rays a character of the *genera*; but I found (yet too late in some instances, where I yielded an implicit faith) that their rule was very fallible, and had induced me into error; but as I borrowed other definitions, it is to be hoped the explanation

tion of the *genera* will be intelligible. I should be very disingenuous, if I did not own my obligations in this respect to the works of ARTEDI, Dr. GRONOVIVS, and LINNÆUS:

It is from the last I have copied the great sections of the BONY FISH into

APODAL,	JUGULAR,
THORACIC,	ABDOMINAL *.

He founds this system on a comparison of the ventral fins to the feet of land animals or reptiles; and either from the want of them, or their particular situation in respect to the other fins, establishes his sections.

In order to render them perfectly intelligible, it is necessary to refer to those several organs of movement, and some other parts, in a perfect fish, or one taken out of the three last sections.

The HADDOCK. Expl. Pl. *fig.* 4.

- a.* The pectoral fins.
- b.* ventral fins.
- c.* anal fins.
- d.* caudal fin, or the tail.
- e. e. e.* dorsal fins.
- f.* bony plates that cover the gills.
- g.* branchiostegous rays, and their membranes.
- b.* lateral, or side line.

* • *Vide Syst. Nat.* 422.

S E C T.

S E C T. I. A P O D A L.

THE most imperfect, wanting the ventral fins; illustrated by the CONGER, *fig. 3*. This also expresses the union of the dorsal and anal fins with the tail, as is found in some few fish.

- XII. EEL.
- XIII. WOLF FISH.
- XIV. LAUNCE.
- XV. MORRIS.
- XVI. SWORD FISH.

S E C T. II. J U G U L A R.

THE ventral fins *b*, placed before the pectoral fins *a*, as in the HADDOCK, *fig. 4*.

- XVII. DRAGONET.
- XVIII. WEEVER.
- XIX. CODFISH. •
- XX. BLENNY.

S E C T.

S E C T. III. T H O R A C I C.

THE ventral fins *a*, placed beneath the pectoral fins *b*, as in the FATHER LASHER, *fig. 5*.

- XXI. GOBY.
- XXII. BULL-HEAD.
- XXIII. DOREE.
- XXIV. FLOUNDER.
- XXV. GILT-HEAD.
- XXVI. WRASSE.
- XXVII. PERCH.
- XXVIII. STICKLEBACK.
- XXIX. MACKREL.
- XXX. SURMULLET.
- XXXI. GURNARD.

S E G T. IV. A B D O M I N A L.

THE ventral fins placed behind the pectoral fins, as in the
MINOW, *fig. 6.*

- | | |
|----------|--------------|
| XXXII. | LOCHE. |
| XXXIII. | SALMON. |
| XXXIV. | PIKE. |
| XXXV. | ARGENTINE. |
| XXXVI. | ATHERINE. |
| XXXVII. | MULLET. |
| XXXVIII. | FLYING FISH. |
| XXXIX. | HERRING. |
| XL. | CARP. |

D I V.

7. 22 9^o



DIV. I. CETACEOUS FISH.

NATURE on this tribe hath bestowed an internal structure in all respects agreeing with that of quadrupeds; and in a few other the external parts in both are similar.

Cetaceous Fish, like land animals, breathe by means of lungs, being destitute of gills. This obliges them to rise frequently to the surface of the water to respire, to sleep on the surface, as well as to perform several other functions.

They have the power of uttering sounds, such as bellowing and making other noises, a faculty denied to genuine fish*.

Like land animals they have warm blood, are furnished with organs of generation, copulate, bring forth, and suckle their young, shewing a strong attachment to them.

Their bodies beneath the skin are entirely surrounded with a thick layer of fat (blubber) analogous to the lard on hogs.

The number of their fins never exceeds three, viz. two pectoral fins, and one back fin; but in some species the last is wanting.

Their tails are placed horizontally or flat in respect to their bodies; contrary to the direction of those of all other fish, which have

* *Pentop. Hist. Norw.* II. 123. *Blasius Anat. Animal*, 288.

them in a perpendicular site. This situation of the tail enables them to force themselves suddenly to the surface of the water to breathe, which they are so frequently constrained to do.

Many of these circumstances induced *Linnaeus* to place this tribe among his *Mammalia*, or what other writers style quadrupeds.

To have preserved the chain of beings entire, he should in this case have made the genus of *Phoca*, or *Seals*, and that of the *Trichecus* or *Manati*, immediately precede the whale, those being the links that connect the *Mammalia* or quadrupeds with the fish; for the *Seal* is, in respect to its legs, the most imperfect of the former class; and in the *Manati* the hind feet coalesce, assuming the form of a broad horizontal tail.

Notwithstanding the many parts and properties which cetaceous fish have in common with land animals, yet there still remain others, that in a natural arrangement of the animal kingdom, must determine us after the example of the illustrious *Ray**, to place them in the rank of fish; and for the same reasons, that first of systematic writers assigns,

That the form of their bodies agrees with that of fish.

They are entirely naked, or covered only with a smooth skin.

They live entirely in the water, and have all the actions of fish.

* Who makes two divisions of fish.

1. *Pulmones respirantes.*

2. *Branchiis respirantes.*

Cetaceous

Cetaceous Fish without teeth, with horny laminæ in their mouths.

I.
WHALE.

- Muricænos. Arist. hist. an. Lib. III. c. 12.* The Whale. *Marten's Spitzberg.* 130. 16. COMMON.
Crantz's Greenl. I. 107.
Musculus Plumii, Lib. XI. c. 37. La Baleine ordinaire. *Briffon Cet.* 218.
Balæna. Rondel. 475. Gesner Pisc. 114. Balæna fistula in medio capite, dorso
Balæna major, laminas corneas in su- caudum versus, acuminato. *Aried.*
periore maxillas habens, fistula do- *syn.* 106. *Sp.* 106.
nata, bipinnis. Sib. Phalen. 28. Balæna mysticetus. *Lin. syst.* 105.
Balæna vulgaris edentula, dorso non Gronlands Walfish. *Fann. Succ.*
pinnato. Raii syn. pisc. 6. No. 49.
Balæna. Rondel. Wil. 18b. 35. Balæna. *Gronov. Zooph.* 29.

THIS species is the largest of all animals: it is even at present sometimes found in the northern seas ninety feet in length; but formerly they were taken of a much greater size, when the captures were less frequent, and the fish had time to grow. Such is their bulk within the *arctic* circle, but in those of the *torrid* zone, where they are unmolested, whales are still seen one hundred and fifty feet long*.

SIZE.

The head is very much disproportioned to the size of the body,

* *Adanson's voy.* 174. From this account we find no reason to disbelieve the vast size of the *Indian* whales, of whose bones and jaws, both *Strabo, Lib. XV.* and *Pliny, Lib. IX. c. 3.* relate, that the natives made their houses, using the jaws for door-cases. This method of building was formerly practised by the inhabitants of *Greenland*, as we find from *Frobisher*, in his second voyage, p. 18, published in 1587.

being

being one-third the size of the fish : the under lip is much broader than the upper. The tongue is composed of a soft spongy fat, capable of yielding five or six barrels of oil. The gullet is very small for so vast a fish, not exceeding four inches in width. In the middle of the head are two orifices, thro' which it spouts water to a vast height, and with a great noise, especially when disturbed or wounded.

The eyes are no larger than those of an ox.

On the back there is no fin, but on the sides, beneath each eye, are two large ones.

The penis is eight feet in length, inclosed in a strong sheath. The teats in the female are placed in the lower part of the belly.

The tail is broad and semilunar.

This whale varies in color : the back of some being red, the belly generally white. Others are black, some mottled, others quite white, according to the observation of *Marten*, who says, that their colors in the water are extremely beautiful, and that their skin is very smooth and slippery.

WHALE-
BONE.

What is called *whalebone* adheres to the upper jaw, and is formed of thin parallel laminæ, some of the longest four yards in length ; of these there are commonly 350 on each side, but in very old fish more ; of these about 500 are of a length fit for use, the others being too short. They are surrounded with long strong hair, not only that they may not hurt the tongue, but as strainers to prevent the return of their food when they discharge the water out of their mouths.

It is from these hairs that *Aristotle* gave the name of *Muriontos*, or the *bearded whale*, to this species, which he tells us had in its mouth
hairs

CLASS IV. COMMON WHALE.

47

hairs instead of teeth*; and *Pliny* describes the same under the name of *Musculus*†. Though the antients were acquainted with this animal, yet as far as we recollect, they were ignorant of their uses as well as capture.

Aldrovand‡ indeed describes from *Oppian*, what he mistakes for whale fishing: he was deceived by the word κητος, which is used not only to express whale in general, but any great fish. The poet here meant the shark, and shews the way of taking it in the very manner practised at present, by a strong hook baited with flesh. He describes too its three-fold row of teeth, a circumstance that at once disproves its being a whale:

Δεινὸς χαυλιόδοντος ἀναδέας ἤντ' ἀκονίας,
Τριτοῦχί πεφῶντας ἐπασσυντέρησιν ἀκοναῖς.

Halieut. V. lin. 526.

Whose dreadful teeth in triple order stand,
Like spears out of his mouth.

The whale, though so bulky an animal, swims with vast swiftness, and generally against the wind.

It brings only two young at a time, as we believe is the case with all other whales.

Its food is a certain sort of small snail, and as *Linnaeus* says, the *medusa*, or sea blubber. Food.

* ἔτι δὲ καὶ ὁ μυτικητος ὀδὼλος μὲν ἐν τῷ σώματι κη εἶχει, τρίχας δὲ ὁμοίας δειάς.
Hist. an. Lib. III. c. 12.

† *Lib. XI. c. 37.*

‡ *De Cetis. 261.*

The

The great resort of this species is within the *arctic* circle, but they sometimes visit our coasts. Whether this was the *British* whale of the antients we cannot pretend to say, only we find, from a line in *Juvenal*, that it was of a very large size;

Quanto Delphinis Balena Britannica major.

Sat. X.

As much as *British* whales in size surpass
The dolphin race.

To view these animals in a commercial light, we must add, that the *English* were late before they engaged in the whale-fishery: it appears by a set of queries, proposed by an honest merchant in the year 1575, in order to get information in the business, that we were at that time totally ignorant of it, being obliged to send to *Biskae* for men skilful in the catching of the whale, and ordering of the oil, and one cooper skilful to set up the staved cask*. This seems very strange; for by the account *Otiber* gave of his travels to King *Alfred*, near 700 years† before that period, it is evident that he made that monarch acquainted with the *Norwegians* practising the whale-fishery; but it seems all memory of that gainful employ, as well as of that able voyager *Otiber*, and all his important discoveries in the North were lost for near seven centuries.

It was carried on by the *Biscayeners* long before we attempted the trade, and that for the sake not only of the oil, but also of the whalebone, which they seem to have long trafficked in. The

* *Hackluyt's Col. voy.* I. 414.

† *Idem*, I. 4.

earliest

earliest notice we find of that article in our trade is by *Hackluyt* *, who says it was brought from the *Bay of St. Laurence* by an *English* ship that went there for the *barbes* and *fynnes* of whales and train oil, A. D. 1594, and who found there seven or eight hundred *whale fynnes*, part of the cargo of two great *Biskaine* ships, that had been wrecked there three years before. Previous to that, the ladies stays must have been made of split cane, or some tough wood, as Mr. *Anderson* observes in his Dictionary of Commerce †, it being certain that the whale fishery was carried on, for the sake of the oil, long before the discovery of the use of whale-bone.

The great resort of these animals was found to be on the inhospitable shores of *Spitzbergen*, and the *European* ships made that place their principal fishery, and for numbers of years were very successful: the *English* commenced that business about the year 1598, and the town of *Hull* had the honor of first attempting that profitable branch of trade. At present it seems to be on the decline, the quantity of fish being greatly reduced by the constant capture for such a vast length of time: some recent accounts inform us, that the fishers, from a defect of whales, apply themselves to seal fishery, from which animals they extract an oil. This we fear will not be of any long continuance; for these shy and timid creatures will soon be induced to quit those shores by being perpetually harrassed, as the *morse* or *walrus* has already in a great measure done. We are also told, that the poor natives of *Greenland* begin even now to suffer from the decrease of the seal in their seas, it being their principal subsistence; so that should it totally

* *Hackluyt* III. 194.

† *Vol.* I. 442.

desert the coast, the whole nation would be in danger of perishing through want.

ROYAL
FISH.

In old times the whale seems never to have been taken on our coasts, but when it was accidentally flung ashore: it was then deemed a royal fish*, and the king and queen divided the spoil; the king asserting his right to the head, her majesty to the tail†.

17. PIKE-
HEADED.

*Balæna tripinnis nares habens cum
rostro acuto, et plicis in ventre. Sib.
Phalain 29. tab. 1.
Idem. Raii syn. pisc. 16.
Pike-headed Whale. Dale Harwich,
410. No. 3.*

*La Baleine a museau pointu. Brisson
Cet. 224.
Balæna fistula duplici in rostro, dorso
extremo protuberantia cornuiformi.
Arted. syn. 107.
Balæna Boops. Lin. syst. 106.*

SIZE.

THE length of that taken on the coast of *Scotland*, as remarked by Sir *Robert Sibbald*, was forty-six feet, and its greatest circumference twenty.

DESCRIP.

The head of an oblong form, sloping down, and growing narrower to the nose; six feet eight inches from the end of which were two spout-holes, separated by a thin division: the eyes small.

The pectoral fins five feet long, and one and a half broad: on the back, about eight feet and an half from the tail, in lieu of a

* Item habet warectum maris per totum regnum *Ballenae* et *Sturgiones* captos, &c. *Edwardi II. anno 17mo.*

† *Blackstone's Com. I. c. 4.*

back

CLASS IV. F I N F I S H.

51

back fin, was a hard horny protuberance: the tail was nine feet and a half broad.

The belly was uneven, and formed into folds running lengthways.

The skin extremely smooth and bright; that on the back black; that on the belly white.

This species takes its name from the shape of its nose, which is narrower and sharper pointed than that of other whales.

Balæna edentula corpore strictiore, dor- Le Gibbar. *Briffon Cet.* 222. 18. FIN FISH.
so pinnato. Raii syn. pisc. 9. *Dale* *Balæna fistula in medio capite tubero*
Harwich, 410. No. 2. penniformi in extremo dorso. *Arted.*
Fin Fish. Marten's Spitzberg. 165. *syn.* 107.
Egede Greenl. 65. Crantz Greenl. I. 110. *Balæna Physalus. Lin. Syst.* 106.

THIS species is distinguished from the common whale by a fin on the back, placed very low and near the tail.

The length is equal to that of the common kind, but much more slender. It is furnished with whale-bone in the upper jaw, mixed with hairs, but short and knotty, and of little value. The blubber also on the body of this kind is very inconsiderable; these circumstances, added to its extreme fierceness and agility, which renders the capture very dangerous, cause the fishers to neglect it. The natives of *Greenland* though hold it in great esteem, as it affords a quantity of flesh, which to their palate is very agreeable.

The lips are brown, and like a twisted rope: the spout hole is as it were split in the top of its head, through which it blows water

H 2

with

ROUND-LIPPED WHALE. CLASS IV.

with much more violence, and to a greater height, than the common whale. The fishers are not very fond of seeing it, for on its appearance the others retire out of those seas.

Some writers conjecture this species to have been the *Φυσάλος*, and *Physeter*, or blowing whale of *Oppian*, *Ælian*, and *Pliny**; but since those writers have not left the least description of it, it is impossible to judge which kind they meant; for in respect to the faculty of spouting out water, or blowing, it is not peculiar to any one species, but common to all the whale kind.

19. ROUND-LIPPED.

Balæna tripinnis maxillam inferiorem rotundam et superiore multo latiorem habens. *Sib. Phalain.* 33. tab. T. 3. Idem. *Raii syn. pisc.* 16. La Baleine a museau rond. *Briffon Cet.* 222.

B. fistula duplici in fronte maxilla inferiore multo latiore. *Aried. syn.* 107. *Balæna musculus.* *Lin. fysz.* 106.

THE character of this species is to have the lower lip broader than the upper, and of a semicircular form.

That taken in 1692 near *Abercorn-Castle*, was seventy-eight feet long, the circumference thirty-five; the *ristus* or gape very wide; the tongue fifteen feet and a half long; the mouth furnished with short whale-bone, about three feet in length. On the forehead were two spout holes of a pyramidal form.

The eyes were placed thirteen feet from the end of the nose: the pectoral fins ten feet long: the back fin about three feet high,

* *Oppian, Halicut, l. Lin.* 368. *Ælian Hist. an. ix. c. 49. Plin. lib. ix. c. 5.*
placed

placed near the tail, which was eighteen feet broad: the belly was full of folds.

This species is said to feed on herrings.

Buttkopf. *Marten's Spitzberg.* 124. Nebbe-haul, or beaked Whale. *Pontop.* 20. BEAKED.
Bottle-head, or Flounders-head. *Dale* *Norway, I.* 123.
Harwich, 411. tab. 14.

THIS species was taken near *Maldon*, 1717, and thus described by *Dale* and *Marten*.

The length was fourteen feet, the circumference seven and an half; the body very thick, the forehead high, the nose depressed, and of the same thickness its whole length, not unlike the beak of a bird: in the mouth were no teeth.

The eyes large, the eyelids small, and placed a little above the line of the mouth. The spout hole was on the top of the head semicircular, with the corners pointed towards the tail.

The pectoral fins were seventeen inches long. The back fin was placed rather nearer the tail than the head, and was a foot long: the breadth of the tail was three feet two inches.

These fish sometimes grow to the length of twenty feet; they make but little noise in blowing, are very tame, come very near the ships, and will accompany them for a great way.

Belon describes and figures a fish very much resembling, if not the same with this: he says it furnished whale bone, *Dont les*

Dames

*Dames font aujourd'uy leurs bustes et arrondissent leurs verdugades**, by which it appears, that the commodity was but newly known at that time in *France*. He adds, that the tongue was very good eating, and both that and the flesh used to be salted for provision.

* *Belon de la nat. Sc. des Poissons*, 1555, p. 6, by which it appears that the *French* were acquainted with that article at least forty years before we were.

Cataceous

PL VI.

BLUNT HEADED CACHALOT.

Nº 21.



Cetaceous Fish, with teeth in the lower jaws only.

II. CACHALOT.

Trumpa. *Purchasi's Pilgrimes* III. 471.
Balæna major in inferiore tantum
maxilla dentata dentibus arcuatis fal-
ciformibus, pinnam five spinam in
dorso habens. *Sib. Phalain.* 13. *tab.*
A. 1. *Raii syn. pisc.* 15.
Le cachalot a dents en faucilles. *Briffan*
Cet. 229.

The Parmacitty Whale, or Pot Wal
Fish. *Dale Harwich,* 413.
Physeter microps. *Lin. Syst.* 107.
Arted. syn. 104.
Cachalot, Catodon, or Pot Fish. *Crantz*
Greenl. I. 112.

21. BLUNT-
HEADED.

A FISH of this kind was cast ashore on *Cramond Isle*, near *Edin-
burgh*, December 22d, 1769; its length was fifty-four feet,
the greatest circumference, which was just beyond the eyes, thirty:
the upper jaw was five feet longer than the lower, whose length was
ten feet.

SIZE.

The head was of a most enormous size, very thick, and above
one-third the size of the fish: the end of the upper jaw was quite
blunt, and near nine feet high: the spout hole was placed near the
end of it.

DESCRIP.

The teeth were placed in the lower jaw, twenty-three on each
side, all pointing outwards; in the upper jaw, opposite to them,
were an equal number of cavities, in which the ends of the teeth
lodged when the mouth was closed. The tooth, figured in *plate* iii.
No. 2. was eight inches long, the greatest circumference the same.
It is hollow within side for the depth of three inches, and the
mouth of the cavity very wide: it is thickest at the bottom, and
grows

TEETH.

ROUND-HEADED CACHALOT. CLASS IV.

grows very small at the point, bending very much; but in some the flexure is more than in others. These, as well as the teeth of all other whales we have observed, are very hard, and cut like ivory.

The eyes very small, and remote from the nose.

The pectoral fins placed near the corners of the mouth, and were only three feet long: it had no other fin, only a large protuberance on the middle of the back.

The tail a little forked, and fourteen feet from tip to tip.

The penis seven feet and a half long.

The figure, *plate ii.* we borrowed from a print in the LX. vol. of the *Pb. Tr. p.* where there is a very good account of this species by Mr. *James Robertson*, surgeon.

This is one of the species which yield what is improperly called SPERMACEI *sperma ceti*; that substance being found lodged in the head of the fish that form this genus, which the *French* call *Cachalot*, a name we have adopted, having no general term for it in our tongue.

Linnaeus informs us, that this species pursues and terrifies the Porpoisses to such a degree as often to drive them on shore.

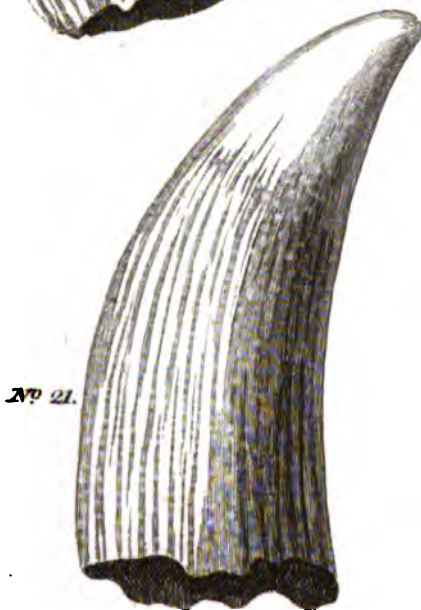
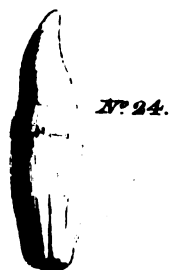
22. ROUND-
HEADED.

Balæna minor in inferiore maxilla tantum dentata sine spina aut pinna in dorso. *Sib. Phalain. 9. Raii syn. pisc. 15.*

Le petit Cachalot. *Briffon Cat. 228.*
Phyfeter Catodon. *Lin. syst. 107.*
Catodon fistula in rostro. *Arted. synon. 108.*

THIS species was taken on one of the *Orkney* Isles, a hundred and two of different sizes being cast ashore at one time, the largest twenty-four feet in length.

The



P. Mayall del. sculp.

The head was round, the opening of the mouth small: *Sibbald* says it had no spout hole, but only nostrils. We rather think, that the former being placed at the extremity of the nose was mistaken by him for the latter.

The teeth we have in our cabinet of this species (*plate iii. No. 4.*) are an inch and three-quarters long, and in the largest part, of the thickness of one's thumb. The top is quite flat, and marked with concentric lines; the bottom is more slender than the top, and pierced with a small orifice.

The back fin was wanting; instead was a rough space.

Balaena macrocephala tripinnis, quæ in mandibula inferiore dentes habet minus inflexos et in platum definites. *Sib. Phalain. 18. Raii syn.*

pisc. 16.
Le Cachalot a dents plattes. *Briffon*
Cet. 230.

23. HIGH-FINNED.

ONE of this species was cast on the *Orkney Isles* in 1687. The spout hole was placed in front, and on the middle of the back was a high fin, which *Sibbald* compares to the mizen mast of a ship. The head abounded with *sperma ceti* of the best sort.

The teeth of this kind are very slightly bent; that which we have figured, *plate iii. No. 1.* is seven inches three-quarters in length; the greatest circumference nine: it is much compressed on the sides; the point rather blunt than flat; the bottom thin, having a very narrow but long orifice, or slit, hollowed to the depth of five inches and a quarter, and the tooth was immersed in the jaw as far as that hollow.

TEETH.

III.
DOLPHIN.

Cetaceous Fish, with teeth in both jaws.

24. DOL-
PHIN.

Δελφίς. *Arist. Hist. an. lib. vi. c. 12.*

Δελφίν. *Ælian lib. I. c. 18.*

Delphinus *Plinii, lib. ix. c. 8.* Le

Daulphin, ou oye de mer. *Belon*

Poiss. 7.

Delphinus. *Rondel. 459. Gesner pisc.*

319. *Caii opusc. 113.*

Delphinus Antiquorum. *Wil. Ictb. 28.*

Raii syn. pisc. 12.

Delphinus corpore longo subtereti, rostro

longo acuto. *Arted. syn. 105.*

Le Dauphin. *Briffon Cet. 233.*

Delphinus Delphis. *Lin. syst. 108.*

Dolphin. *Borlase Cornwall, 264. tab.*

27. *Grantz Greenl. I. 115.*

HISTORIANS and philosophers seem to have contended who should invent most fables concerning this fish. It was consecrated to the Gods, was celebrated in the earliest time for its fondness of the human race, was honored with the title of the *Sacred Fish**, and distinguished by those of *Boy-loving*, and *Philanthropist*. It gave rise to a long train of inventions, proofs of the credulity and ignorance of the times.

Aristotle steers the clearest of all the antients from these fables, and gives in general so faithful a natural history of this animal, as evinces the superior judgment of that great philosopher, in comparison to those who succeeded him. But the elder *Pliny*, *Ælian*, and others, seem to preserve no bounds in their belief of the tales related of this fish's attachment to mankind.

* *Athenæus, 281.*

Pliny

*Pliny** the younger, (apologizing for what he is going to say) tells the story of the enamoured dolphin of *Hippo* in a most beautiful manner. It is too long to be transcribed, and would be injured by an abridgement; therefore we refer the reader to the original, or to Mr. *Melmoth's* elegant translation.

Scarce an accident could happen at sea but the dolphin offered himself to convey to shore the unfortunate. *Arion*, the musician, when flung into the ocean by the pirates, is received and saved by this benevolent fish.

Inde (side majus) tergo Delphina recurvo,
Se memorant oneri supposuisse novo.
Ille sedens citharamque tenens, pretiumque vehendi
Cantat, et æquoreas carmine mulcet aquas.

Ovid. Fasti, lib. ii. 113.

But (past belief) a Dolphin's arched back,
Preserved *Arion* from his destined wrack;
Secure he sits, and with harmonious strains,
Requites his bearer for his friendly pains.

We are at a loss to account for the origin of those fables, since it does not appear that the dolphin shews a greater attachment to mankind than the rest of the cetaceous tribe. We know that at present the appearance of this fish, and the porpoise, are far from being esteemed favorable omens by the seamen; for their boundings, springs and frolics in the water, are held to be sure signs of an approaching gale.

* *Epist. lib. ix. v. 33.*

salmon, which they pursue up the bays with the same eagerness as a pack of dogs does a hare. In some places they almost darken the sea as they rise above water to take breath : but porpesses not only seek for prey near the surface, but often descend to the bottom in search of sand eels, and sea worms, which they root out of the sand with their noses in the same manner as hogs do in the fields for their food.

DESCRIP. Their bodies are very thick towards the head, but grows slender towards the tail, forming the figure of a cone.

The nose projects a little, is much shorter than that of the dolphin, and is furnished with very strong muscles, which enables it the readier to turn up the sand.

TEETH. In each jaw are forty-eight teeth, small, sharp pointed, and a little moveable : like those of the dolphin, they are so placed as that the teeth of one jaw locks into those of the other when closed.

The tongue is flat, pectinated at the edges, and fastened down to the bottom of the mouth.

The eyes small ; the spout hole on the top of the head.

On the back is one fin placed rather below the middle ; on the breast are two fins. The tail semilunar.

The color of the porpessie is generally black, and the belly whitish, not but they sometimes vary ; for in the river *St. Laurence* there is a white kind ; and Doctor *Borlase*, in his voyage to the *Scilly* isles, observed a small species of cetaceous fish, which he calls *thornbacks*, from their broad and sharp fin on the back, some of these were brown, some quite white, others spotted : but whether they were only a variety of this fish, or whether they were small *grampuses*, which are also spotted, we cannot determine.

The

The porpessè is remarkable for the vast quantity of the fat or lard that surrounds the body, which yields a great quantity of excellent oil: from this lard, or from their rooting like swine, they are called in many places *sea bogs*; the *Germans* call them *meer-schwein*; the *Swedes*, *marfuin*; and the *English*, *porpessè*, from the *Italian*, *porco pesce*.

It would be curious to trace the revolutions of fashion in the article of eatables; what epicure first rejected the Sea-Gull and Heron; and what delicate stomach first nauseated the greasy flesh of the Porpessè. This latter was once a royal dish, even so late as the reign of *Henry VIII.* and from its magnitude must have held a very respectable station at the table; for in a household book of that prince, extracts of which are published in the third volume of the *Archæologia*, it is ordered that if a Porpessè should be too big for a horse-load, allowance should be made to the purveyor. I find that this fish continued in vogue even in the reign of *Elizabeth*, for Doctor *Caius* * on mentioning a Dolphin (that was taken at *Shoreham*, and brought to *Thomas Duke of Norfolk*, who divided, and sent it as a present to his friends) says, that it eat best with *Porpessè sauce*, which was made of vinegar, crumbs of fine bread, and sugar.

* *Opuscula*, 116.

26. GRAMPUS.

*Orca Plinii, Lib. IX. c. 6.**L'oudre ou grand marlouin. Belon, 13.**Orca. Rondelet. 483. Gesner pisc. 635.**Leper, Springer. Schoneveld, 53.**Butzkopf. Marten's Spitzberg. 124.**Balaena minor utraque maxilla dentata.**Sib. Phalæn. 7, 8. Wil. 12b. 40.**Raii syn. pisc. 15.**L' Epaulard. Brisson Cet. 236.**Delphinus orca. Lin. syst. 108.**Loparc, Delphinus rostro sursum repando, dentibus latis ferratis. Arad. syn. 106.*

THIS species is found from the length of fifteen feet to that of twenty-five. It is remarkably thick in proportion to its length, one of eighteen feet being in the thickest place ten feet diameter. With reason then did *Pliny* call this an immense heap of flesh, armed with dreadful teeth*.

It is extremely voracious, and will not even spare the porpoise, a congenerous fish. It is said to be a great enemy to the whale, and that it will fasten on it like a dog on a bull, till the animal roars with pain.

TEETH. The nose is flat, and turns up at the end. There are thirty teeth in each jaw; those before are blunt, round, and slender; the farthest sharp and thick: between each is a space adapted to receive the teeth of the opposite jaw when the mouth is closed.

The spout hole is in the top of the neck. In respect to the number and site of the fins, it agrees with the dolphin.

* Cujus imago nulla representatione exprimi possit alia, quam carnis immensæ dentibus truculentis. *Lib. IX. c. 6.*

The

The color of the back is black, but on each shoulder is a large white spot, the sides marbled with black and white, the belly of a snowy whiteness.

COLOR.

These sometimes appear on our coasts, but are found in much greater numbers off the *North Cape* in *Norway*, whence they are called the *North Capers*. These and all other whales are observed to swim against the wind, and to be much disturbed, and tumble about with unusual violence at the approach of a storm.

PLACE.

Linnaeus and *Artedi* say, that this species is furnished with broad serrated teeth, which as far as we have observed, is peculiar to the *shark* tribe. We therefore suspect that those naturalists have had recourse to *Rondeletius*, and copied his erroneous account of the teeth: Sir *Robert Sibbald*, who had opportunity of examining and figuring the teeth of this fish, and from whom we take that part of our description, giving a very different account of them.

It will be but justice to say, that no one of our countrymen ever did so much towards forming a general natural history of this kingdom as Sir *Robert Sibbald*: he sketched out a fine outline of the *Zoology of Scotland*, which comprehends the greatest part of the *English* animals, and, we are told, had actually filled up a considerable part of it: he published a particular history of the county of *Fife*, and has left us a most excellent history of the whales which frequent the coast of *Scotland*. We acknowledge ourselves much indebted to him for information in respect to many of those fish, few of which frequent the southern seas of these kingdoms, and those that are accidentally cast ashore on our coasts, are generally cut up by the country people, before an opportunity can be had of examining them.

DIV. II. CARTILAGINOUS
FISH.

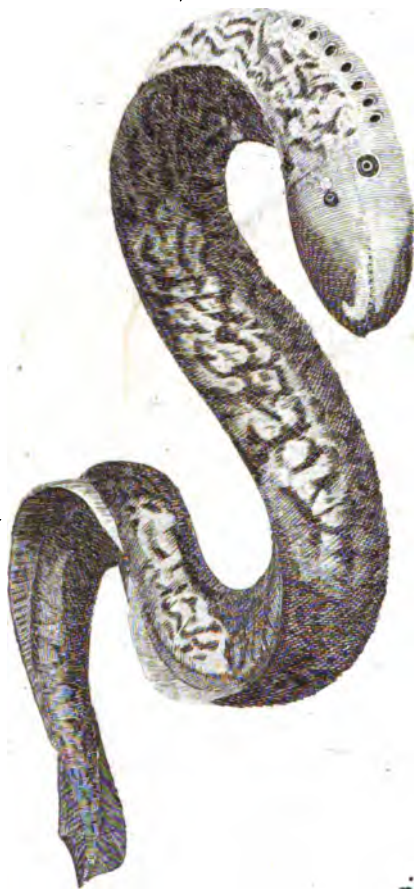
THIS title is given to all fish whose muscles are supported by cartilages instead of bones, and comprehends the same genera of fish to which *Linnaeus* has given the name of *amphibia nantes*: but the word *amphibia*, ought properly to be confined to such animals who inhabit both elements, and can live without any inconvenience for a considerable space, either in land or under water; such as *tortoises*, *frogs*, and several species of *lizards*; and among the quadrupeds, hippopotami, seals, &c. &c. This definition therefore excludes all that form this division.

Many of the cartilaginous fish are viviparous, being excluded from an egg, which is hatched within them. The egg consists of a white and a yolk, and is lodged in a case, formed of a thick tough substance, not unlike softened horn: such are the eggs of the *Ray* and *Shark* kinds.

Some again differ in this respect, and are oviparous; such is the *Sturgeon*, and others.

They breathe either through certain apertures beneath, as in the *Rays*; on their sides as in the *Sharks*, &c. or on the top of the head, as in the *Pipe-fish*; for they have not covers to their gills like the bony fish.

Slender



LAMPRIES.



Slender Eel-shaped body.
Seven apertures on each side;
One on the top of the head.
No pectoral or ventral fins.

IV.
LAMPREY.

La Lamproye de mer. *Belon*, 66.

Lampetra. *Rondel.* 398.

Lampreda. *Gesner. Paralip.* 22. *Pisc.* 590.

Lamprey, or Lamprey Eel. *Wil. Ish.* 105.

Lampetra. *Raii syn. pisc.* 35.

Petromyzon maculosus ordinibus dentium circiter viginti. *Arted. synon.* 90.

Petromyzon marinus. P. ore intus papilloso, pinna dorsali posteriori a cauda distincta. *Lin. syst.* 394. *Faun. Suec.* No. 292.

27. SEA.

LAMPREYS are found at certain seasons of the year in several of our rivers, but the *Severn* is the most noted for them*. They are sea fish, but like salmon, quit the salt waters, and ascend the latter end of the winter, or beginning of spring, and after a stay of a few months return again to the ocean, a very few excepted. The best season for them is in the months of *March*, *April*, and *May*; for they are more firm when just arrived out of the salt water than they are afterwards, being observed to be much wasted, and very flabby at the approach of hot weather.

They are taken in nets along with salmon and shad, and sometimes in weels laid in the bottom of the river.

* They are also found in the most considerable of the *Scotch* and *Irish* rivers.

It has been an old custom for the city of *Gloucester*, annually, to present his majesty with a *lamprey* pye, covered with a large raised crust. As the gift is made at *Christmas*, it is with great difficulty the corporation can procure any fresh lampreys at that time, though they give a guinea a-piece for them, so early in the season.

They are reckoned a great delicacy, either when potted or stewed, but are a surfeiting food, as one of our monarchs fatally experienced, *Henry* the First's death being occasioned by a too plentiful meal of these fish. It appears that notwithstanding this accident, they continued in high esteem; for *Henry* the Fourth granted protections to such ships as brought over lampreys for the table of his royal consort*. His successor issues out a warrant to *William* of *Nantes*, for supplying him and his army with lampreys, wheresoever they happen to march†. Directions are afterwards given that they should be taken between the mouth of the *Seyne* and *Harfleur*.

Lampreys are sometimes found so large as to weigh four or five pounds.

The mouth is round and placed rather obliquely below the end of the nose: the edges are jagged, which enables them to adhere the more strongly to the stones, as their custom is, and which they do so firmly as not to be drawn off without some difficulty.

We have heard of one weighing three pounds, which was taken out of the *Esk*, adhering to a stone of twelve pounds weight, suspended at its mouth, from which it was forced with no small pains.

* *Rymer*, VIII. 429.

† *Idem*. IX. 544.

There

There are in the mouth twenty rows of small teeth, disposed in circular orders, and placed far within.

The color is dusky, irregularly marked with dirty yellow, which gives the fish a disagreeable look.

We believe that the ancients were unacquainted with this fish; so far is certain, that which Doctor *Arbutnot*, and other learned men, render the word *lamprey*, is a species unknown in our seas, being the *muræna* of *Ovid*, *Pliny*, and others, for which we want an *English* name. This fish, the *Lupus* (our Basse) and the *Myxo** (a species of mullet) formed that pride of *Roman* banquets, the *Tripatinam*†, so called according to *Arbutnot*, from their being served up in a machine with three bottoms.

NOT THE
MURÆNA.

The words *Lampetra* and *Petromyzon*, are but of modern date, invented from the nature of the fish; the first a *Lambendo petras*, the other from *Πέρκος*, and *Μύζω*, because they are supposed to lick, or suck the rocks.

* Perhaps the species called by *Rondeletius*, *Muge*, and *Maxon*. de Pisc. P. 295.

† Atque ut luxu quoque aliqua contingat auctoritas figlinis, *Tripatinam*, inquit *Fenestella*, appellabatur, summa cænarum lautitia. una erat *Murænarum*, altera *Luporum*, tertia *Myxenis* piscis. *Plinii* Hist. Nat. lib. XXXV. c. 12.

V.
RAY.

Body broad, flat, and thin.

Five apertures on each side placed beneath :

Mouth situated quite below.

* With sharp teeth.

30. SKATE. *Batis?* *Arist. hist. an. Lib. I. c. 5.* *Rait syn. pisc. 25.*
Lib. VI. c. 10. Oppian Halieut. I. *Raia Batis. Lin. syst. 395.*
 103. *Raia varia, dorso medio glabro, unico*
Raia undulata five cinerea. Rondel. *aculeorum ordine in cauda. Arted.*
 346. *Gesner pisc. 791.* *synon. 102.*
 The Skate, or Flaire. *Wil. Itab. 69.* *Gronov. Zooph. No. 157.*

SIZE.

THIS species is the thinnest in proportion to its bulk of any of the genus, and also the largest, some weighing near two hundred pounds.

DESCRIP.

The nose, though not long, is sharp pointed ; above the eyes is a set of short spines : the whole upper part of that we examined was of a pale brown. Mr. Ray says, some he saw were streaked with black : the lower part is white, marked with great numbers of minute black spots. The jaws were covered with small granulated but sharp-pointed teeth.

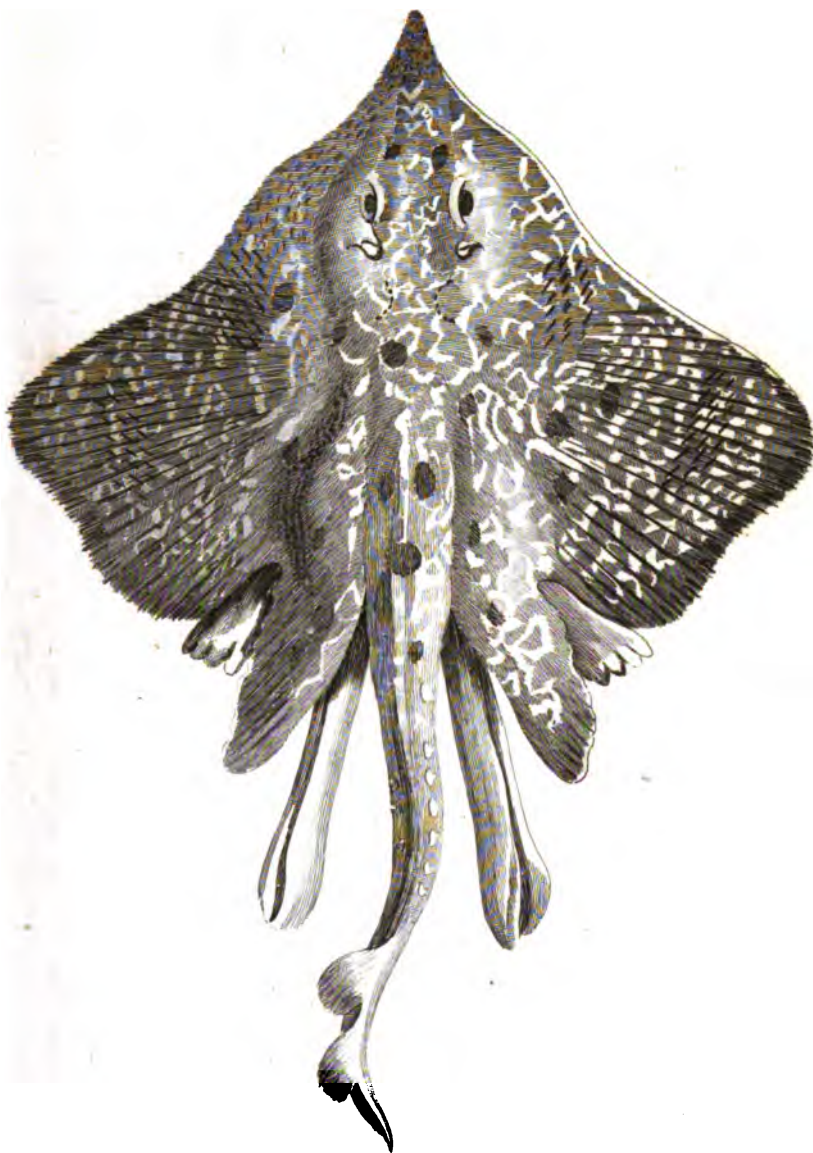
The tail is of a moderate length : near the end are two fins : along the top of it is one row of spines, and on the edges are irregularly dispersed a few others, which makes us imagine with Mr.

Ray,

PL. IX.

Nº 30.

SKATE.



CLASS IV. SHARP-NOSED RAY.

73

Ray, that in this respect these fish vary, some having one, others more orders of spines on the tail.

It is remarked that in the males of this species the fins are full of spines.

Skates generate in *March* and *April*, at which time they swim near the surface of the water, several of the males pursuing one female. They adhere so fast together in coition, that the fishermen frequently draw up both together, though only one has taken the bait. The females begin to cast their *purses*, as the fishermen call them (the bags in which the young are included) in *May*, and continue doing it till *September*. In *October* they are exceedingly poor and thin, but in *November* they begin to improve, and grow gradually better till *May*, when they are in the highest perfection. The males go sooner out of season than the females.

GENERA-
TION.

Buc? *Arist. hist. an. Lib. V. c. 5.* *Wil. Lab. 71.* *Raii syn. pisc. 26.*
Oppian Halieut. II. 141. *Raia oxyrinchus. Lin. syst. 395.*
Bos Ovidii? 94. Plinii, Lib. IX. c. 24. *Raia varia tuberculis decem aculeatis*
in medio dorso. Arted. synon. 101.
Raia oxyrinchus. Rondel. 347. Gesner pisc. 792.

31. SHARP-
NOSED.

IN fishing in the *Menai* (the strait that divides *Anglesea* from *Caernarvonshire*) *July* 1768, we took one of this species whose length was near seven feet, and breadth five feet two inches; when just brought on shore, it made a remarkable snorting noise.

The nose was very long, narrow, and sharp-pointed, not unlike the end of a spoutoon.

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The

SHARP-NOSED RAY. CLASS IV.

The body was smooth, and very thin in proportion to the size; the upper part ash colored, spotted with numerous white spots, and a few black ones.

The tail was thick; towards the end were two small fins, on each side was a row of small spines, with another row in the middle, which run some way up the back.

The lower part of the fish was quite white.

The mouth very large, and furnished with numbers of small sharp teeth bending inwards.

On its body we found the *birudo muricata*, which adhered very strongly, and when taken off left a black impression.

This fish has been supposed to be the *Bos* of the ancients, which was certainly some enormous species of *Ray*, though we cannot pretend to determine the particular kind: *Oppian* styles it,

Ευρυτάτῳ παντοῖσι μετ' ἰχθύσιν.

Broadest among fishes.

He adds an account of its fondness of human flesh, and the method it takes of destroying men, by over-laying and keeping them down by its vast weight till they are drowned. *Phile* gives much the same relation*. We are inclined to give them credit, since a modern writer †, of undoubted authority, gives the very same account of a fish found in the *South Seas*, the terror of those employed in the pearl fishery. It is a species of *ray*, called there *Manta*, or the *Quilt*, from its surrounding and wrapping up the unhappy

* *De propriis. Anim.* 85.

† *Ulloa's voy.* I. 132. 8vo. edit.

divers

divers till they are suffocated ; therefore the negroes never go down, without a sharp knife to defend themselves against the assaults of this terrible enemy.

Raia ateria aspera. Rendel. 352.
Gesner pisc. 794. Wil. 126. 78.
Raii syn. pisc. 28.

32. Rouen.

I TOOK this species in *Loch Broom* in the shire of
The length from the nose to the tip of the tail was two feet nine. The tail was almost of the same length with the body.

Nose very short. Before each eye a large hooked spine, and behind each another, beset with lesser. The upper part of the body of a cinereous brown mixed with white, and spotted with black ; and entirely covered with small spines. On the tail were three rows of great spines : all the rest of the tail was irregularly beset with lesser.

The fins, and under side of the body were equally rough with the upper.

The teeth were flat, and rhomboidal.

33. FULLER. *Raia fullonica*. *Rondel.* 357. *Gesner* *Raia dorso toto aculeato, aculeorum*
pisc. 797. *ordine simplici ad oculos, duplici*
Raia aspera nostras, the white horse. *in cauda. Arted. syn.* 101. *Grenov.*
Wil. Tab. 78. *Raii syn. pisc.* 26. *Zoepp.* No. 155.
Raia fullonica. Lin. syst.

THIS species derives its *Latin* name from the instruments fullers make use of in smoothing cloth, the back being rough and spiny.

The nose is short and sharp. At the corner of each eye a few spines. The membrane of nictitation is fringed. Teeth small, and sharp.

On the upper part of the pectoral fins are three rows of spines pointing towards the back, crooked, like those on a fuller's instrument.

On the tail are three rows of strong spines: the middle row reaches up part of the back. The tail is slender, and rather longer than the body.

The color of the upper part of the body is cinereous, marked usually with numerous black spots: the lower part is white. This, as well as most other species of Rays, vary a little in color, according to age.

This grows to a size equal to the Skate. It is common at *Scarborough*, where it is called the *White Hans*, or Gullet.

I met

I MET with this species at *Scarborough*, where it is called the *French Ray*.

34. SHAG-
REEN.

It encreases to the size of the *Skate*; is fond of *Launces*, or Sand-eels, which it takes greedily as a bait.

The form is narrower than that of the common kinds: the nose long and very sharp: pupil of the eye, sapphirine: on the nose are two short rows of spines: on the corner of the eyes another of a semicircular form: on the tail are two rows, continued a little up the back, small, slender, and very sharp: along the sides of the tail is a row of minute spines, intermixed with innumerable little *spicule*. The upper part of the body is of a cinereous brown, covered closely with minute shagreen-like tubercles, resembling the skin of the dog-fish: the under side of the body is white: from the nose to the beginning of the pectoral fins is a tuberculated space.

The teeth slender, and sharp as needles.

Labelette? BRAZIL: *Marcgrave*. 175.

35. WHIP.

MR. *Travis*, surgeon at *Scarborough*, had, in the summer of 1769, the tail of a Ray brought to him by a fisherman of that town: he had taken it in the sea off the coast, but flung away the body.

It was above three feet long, extremely slender and taper, and destitute of a fin at the end. I believe it to belong to the species called.

called by the *Brasilians* *Iaberete*; and that it is likewise found in the *Sicilian* seas. I once received the tail of one from that island, corresponding with the description Mr. *Travis* gave: I must also add, that it was entirely covered with hard obtuse tubercles.

36. ELEC-
TRIC.

Napm. Arist. Hist. an. lib. V. c. 5. Torpedo. Cramp Fish. *Wil. Ich.* 81.
IX. c. 37. *Oppian Halieut. I.* 104. *Raii syn. pisc.* 28.
II. 56. III. 149. *Smith's Hist. Waterford,* 271.
Torpedo. *Plinii lib. IX. c. 42.* Raia Torpedo. *Lin. syst.* 395.
La Tremble ou Torpille. Belon 78, *Raia tota laevis. Arted. synon.* 102.
81. *Gronov. Zooph. No.* 153. *tab. 9.*
Torpedo. *Rondel. Gesner pisc.* *Pb. Tr.* 1773, 1774.

THE narcotic or numbing quality of this fish has been taken notice of in all ages: it is so powerful when the fish is alive, as instantly to deprive the person who touches it of the use of his arm, and even to affect him if he touches it with a stick. *Oppian* goes so far as to say, that it will benumb the astonished fisherman, even through the whole length of line and rod.

Ναὶ μὲν καὶ ΝΑΡΚΗ σφέτερον νόον ἐκ ἀπολείπει,
Πληγὴ ἀνιάζεσα. Τίταινομένη δ' ὀδυνῶσιν
Ὀρμῇ λαγῶνας προστύσσεται. Αἰψὰ δὲ χαίτης
Ἰπκείης δόνακος τε δίδραμεν, ἐς δ' ἀλῆθ-
Δεξιτέρεν ἔσκηψε φερώνυμον ἰχθυῶ- ἄλγ-
Πολλάκι δ' ἐκ παλάμης κάλαμῶ- πέσεν, ὅπλᾳ τε θήρης
Τοῖ- γὰρ κρύταλλ- ἐνίσταται ἀντικα χειρί.

The hook'd *Torpedo* ne'er forgets its art,
But soon as struck begins to play its part,

And

M.X.



And to the line applies its magic fides,
 Without delay the subtle power glides
 Along the pliant rod, and slender hairs,
 Then to the fisher's hand as swift repairs :
 Amaz'd he stands ; his arm's of sense bereft,
 Down drops the idle rod ; his prey is left :
 Not less benumb'd, than if he had felt the whole
 Of frost's severest rage beneath the *arctic* pole.

But great as its powers are when the fish is in vigor, they are impaired as it declines in strength, and totally cease when it expires. They impart no noxious qualities to it as a food, being commonly eaten by the *French*, who find them more frequently on their coasts than we do on ours.

Galen affirms, that the meat of the *torpedo* is of service to epileptic patients : and that the shock of the living fish applied to the head is efficacious in removing any pains in that part.

We may mention a double use in this strange power the *torpedo* is endued with ; the one, when it is exerted as a means of defence against voracious fish, who are at a touch deprived of all possibility of seizing their prey.

The other is well explained by *Pliny*, who tells us, it attains by the same powers its end in respect to those fish it wishes to ensnare. *Novit torpedo vim suam, ipsa non torpens ; mersaque in limo se occultat piscium qui securi supernatantes obtorpuere, corripitens* *.

But the acknowledgements of every naturalist are due to *John Walsh*, Esquire, for his curious and unwearied researches into the

* " The *torpedo* is well acquainted with its own powers, though itself never affected by them. It conceals itself in the mud, and benumbing the fish that are carelessly swimming about, makes a ready prey of them."

nature

nature of this fish; and for the first certainty we had of its being a native of our seas. To him I am particularly bound, for being enabled to correct my errors in the former account.

IT is frequently taken in *Torbay*; has been once caught off *Pembroke*, and sometimes near *Waterford* in *Ireland*. It is generally taken, like other flat fish, with the trawl; but there is an instance of its taking a bait, which vindicates the fine account that *Oppian* has left us of this fish. It commonly lies in water of about forty fathoms depth; and in company with the congenerous Rays.

The *torpedo* brings forth its young at the autumnal *equinox* as affirmed by *Aristotle*. A gentleman of *la Rochelle*, on dissecting certain females of this species, the 10th of *September*, found in the *matrices*, several of the *fatuses* quite formed, and nine eggs, in no state of forwardness: superfoetation seems therefore to be a property of this fish.

The food of the *torpedo* is fish; a surmullet and a plaice having been found in the stomach of two of them. The surmullet is a fish of that swiftness, that it was impossible for the torpedo to take it by pursuit. It is probable, that by their electric stroke, they stupefy their prey; yet the crab and sea leech will venture to annoy them.

They will live four and twenty hours out of the sea; and but very little longer if placed in fresh water.

They inhabit sandy places; and will bury themselves superficially in it, by flinging the sand over, by a quick flapping of all the extremities. It is in this situation that the *torpedo* gives his most forcible shock, which throws down the astonished passenger, who inadvertently treads upon him.

In

In our seas it grows to a great size, and above eighty pounds weight. My description was taken from a smaller, which I had the pleasure of doing in company with Mr. *Walsh*.

Its length was eighteen inches from the head to the tip of the tail; the greatest breadth twelve inches. I could not inform myself of the weight of this; but that of one, that measured four feet in length, and two and a half in breadth, was fifty-three pounds, avoirdupoise.

The tail was six inches long; was pretty thick and round: the caudal fin broad and abrupt.

The head and body, which were indistinct, were nearly round; about two inches thick in the middle, attenuating to extreme thinness on the edges: below the body, the ventral fins formed on each side a quarter of a circle. The two dorsal fins were placed on the trunk of the tail.

The eyes were small, placed near each other: behind each was a round spiracle, with six small cutaneous rags on their inner circumference.

Mouth small: teeth minute, spicular.

Five openings to the gills, as in others of this genus.

The skin every where smooth: cinereous brown above; white beneath.

** With blunt Teeth.

37. THORN-
BACK.

La Raye bouclée. *Belon* 70.
Raia clavata. Rondel. 353. *Gesner pisc.*
 795.
Steinroch. Shenervelde, 59.
Thornback, Wil. Ich. 74. *Raii syn.*
pisc. 26.

Raia clavata. Lin. syst. 297. *Gronov.*
Zooph. No. 154.
R. aculeata dentibus tuberculosis, car-
tilagine transversa abdominali. Arted.
synon. 94.
Racka. Faun. Suec. No. 293.

THIS common fish is easily distinguished from the others by the rows of strong sharp spines, disposed along the back and tail. In a large one we saw, were three rows on the back, and five on the tail, all inclining towards its end.

On the nose, and on the inner side of the forehead, near the eyes, were a few spines, and others were scattered without any order on the upper part of the pectoral fins.

The mouth was small, and filled with granulated teeth.

The upper part of the body was of a pale ash color, marked with short streaks of black, and the skin rough, with small tubercles like shagreen.

The belly white, crossed with a strong femilunar cartilage beneath the skin: in general the lower part was smooth, having only a few spines on each side.

The young fish have very few spines on them, and their backs are often spotted with white, and each spot is encircled with black.

This

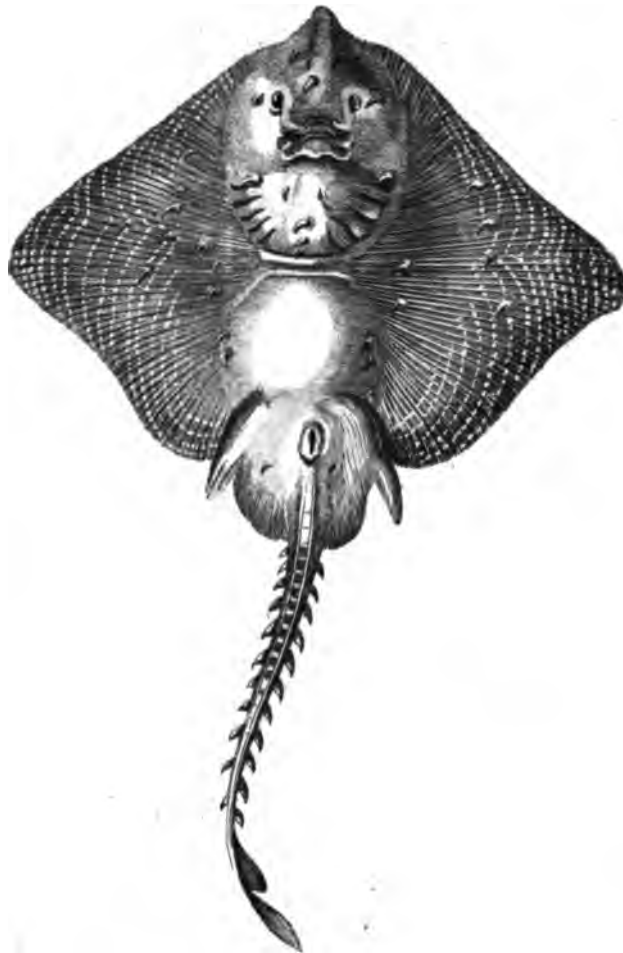
THORN-BACK.



Pl. XL

THORNBACK.

Nº 37.



This species frequents our sandy shores, are very voracious, and feed on all sorts of flat fish, and are particularly fond of herrings and sand eels, and sometimes eat crustaceous animals, such as crabs.

These sometimes weigh fourteen or fifteen pounds, but with us seldom exceed that weight.

They begin to generate in *June*, and bring forth their young in *July* and *August*, which (as well as those of the skate) before they are old enough to breed, are called *maids*. The thornback begins to be in season in *November*, and continues so later than skate, but the young of both are good at all times of the year.

- Τρυγών. Arist. Hist. an. lib. VIII. c. 13. IX. 37. Oppian. Halicut. I. 104. II. 462.*
Pastinaca Plinii lib. IX. c. 42. 38.
La Pastenade de mer, Tourterelle, ou Tareronde. Belon 83.
Pastinaca. Rondel. 331. Gesner pisc. 679.
Steckroche. Grone Tepel. Schonevelde, 38. STINE. 58.
Pastinaca marina lævis. Wil. pisc. 67.
Fire Flaire. Raii syn. pisc. 24.
Raia Pastinaca. Lin. syst. 396.
Raia corpore glabro, aculeo longo anteriore serrato, cauda apterygia. Arted. synon. 100. Gronov. Zooph. No. 158.

THE weapon with which nature has armed this fish, hath supplied the antients with many tremendous fables relating to it. *Pliny*, *Ælian**, and *Oppian*, have given it a venom that affects even the inanimate creation: trees that are struck by it instantly lose their verdure and perish, and rocks themselves are incapable of resisting the potent poison.

* *Hist. an. lib. II. c. 36.*

The enchantress *Circe*, armed her son with a spear headed with the spine of the *Trygon*, as the most irresistible weapon she could furnish him with, and with which he afterwards committed parricide, unintentionally, on his father *Ulysses*.

That spears and darts might, in very early times, have been headed with this bone instead of iron, we have no kind of doubt: that of another species of this fish being still used to point the arrows of some of the *South American Indians*, and is, from its hardness, sharpness, and beards, a most dreadful weapon.

But in respect to its venomous qualities, there is not the least credit to be given to the opinion, though it was believed (as far as it affected the animal world) by *Rondeletius*, *Aldrovand*, and others, and even to this day by the fishermen in several parts of the kingdom. It is in fact the weapon of offence belonging to the fish, capable of giving a very bad wound, and which is attended with dangerous symptoms, when it falls on a tendinous part, or on a person in a bad habit of body. As to any fish having a spine charged with actual poison, we must deny our assent to it, though the report is sanctified by the name of *Linnaeus**.

DESCRIP.

This species does not grow to the bulk of the others: that which we examined was two feet nine inches from the tip of the nose to the end of the tail; to the origin of the tail one foot three inches, the breadth one foot eight.

* *Syst. Nat.* I. 348. He instances the *Pastinaca*, the *Torpedo*, and the *Tetrodon lineatus*. The first is incapable of conveying a greater injury than what results from the meer wound. The second, from its electric effluvia: and the third, by imparting a pungent pain like the sting of nettles, occasioned by the minute spines on its abdomen.

The

CLASS IV.

S T I N G R A Y.

85

The body is quite smooth, of a shape almost round, and is of a much greater thickness, and more elevated form in the middle than any other *Rays*, but grows very thin towards the edges.

The nose is very sharp pointed, but short; the mouth small, and filled with granulated teeth.

The irides are of a gold color: behind each eye the orifice is very large.

The tail is very thick at the beginning: the spine is placed about a third the length of the former from the body, is about five inches long, flat on the top and bottom, very hard, sharp pointed, and the two sides thin, and closely and sharply bearded the whole way. The tail extends four inches beyond the end of this spine, and grows very slender at the extremity.

TAIL.

These fish are observed to shed their spine, and to renew them annually; sometimes the new spine appears before the old one drops off, and the *Cornish* call this species *Cardinal Trilost*, or three tailed, when so circumstanced.

The color of the upper part of the body is a dirty yellow, the middle part of an obscure blue: the lower side white, the tail and spine dusky.

Slender

VI.
SHARK.

Slender body growing less towards the tail.

Two fins on the back.

Rough skin.

Five apertures on the sides of the neck.

Mouth generally placed far beneath the end of the nose.

The upper part of the tail longer than the lower.

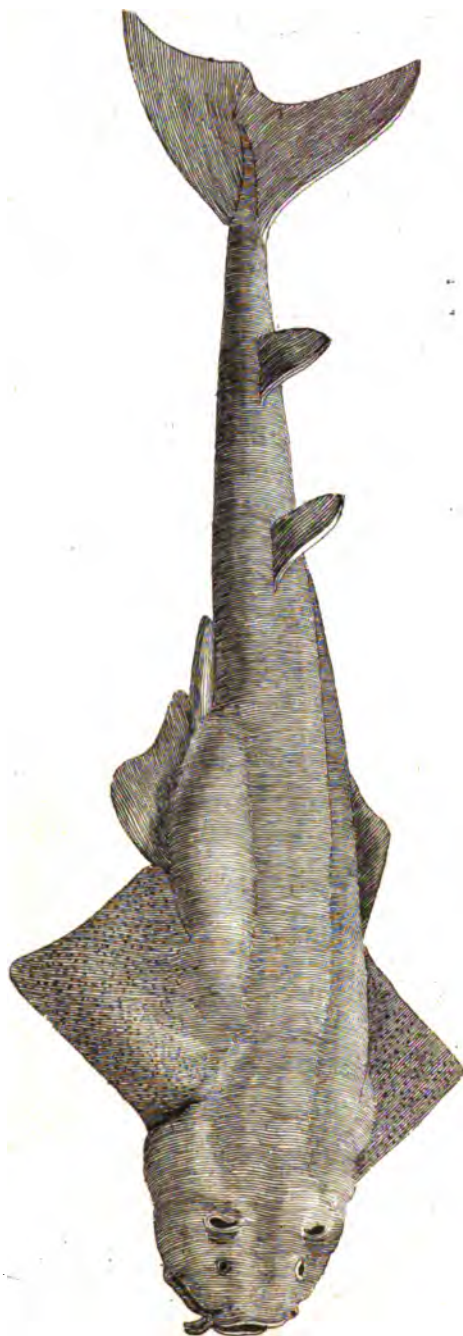
* Without the anal fin.

39. ANGEL. *Pinn. Arist. Hist. an. lib. V. c. 5, &c.* Monk, or Angel Fish. *Rai syn. pisc.*
Athenæus, lib. VII. p. 319. 26.
Oppian Halieut. I. 388, 742. Squalus squatina. *Lin. syst. 398.* S.
Squatina Plin. lib. IX. c. 12. Rhina, pinna ani nulla, caudæ duabus, ore
sc. Squatus. lib. XXXII. c. 11. terminali, naribus cirrosis. *Ibid.*
L'Ange, ou Angelot de mer. Belon Sq. pinna ani carens, ore in apice capi-
69. tis. *Arted. syn. 95.*
Squatina. Rondel. 367. Gesner pisc. Gronov. Zooph. No. 151.
899. Wil. Ictb. 79.

THIS is the fish which connects the genus of Rays and Sharks, partaking something of the character of both; yet in an exception to each in the situation of the mouth, which is placed at the extremity of the head.

It is a fish not unfrequent on most of our coasts, where it prowls about for prey like others of the kind. It is extremely voracious, and, like the Ray, feeds on flounders and flat fish, which keep at the

ANGEL SHARK.



the bottom of the water, as we have often found on opening them. It is extremely fierce and dangerous to be approached. We knew an instance of a fisherman, whose leg was terribly tore by a large one of this species, which lay within his nets in shallow water, and which he went to lay hold of incautiously. FIERCENESS.

The aspect of these, as well as the rest of the genus, have much malignity in them: their eyes are oblong, and placed lengthways in their head, sunk in it, and overhung by the skin, and seem fuller of malevolence than *we*.

Their skin is very rough; the ancients made use of it to polish wood and ivory*, as we do at present that of the greater dog-fish. The flesh is now but little esteemed on account of its coarseness and rankness, yet *Archestratus* (as quoted by *Athenæus*, p. 319.) speaking of the fish of *Miletus*, gives this the first place in respect to its delicacy of the whole cartilaginous tribe.

They grow to a great size; we have seen them of near an hundred weight. DESCRIP.

The head is large, the teeth broad at their base, but slender and very sharp above, and disposed in five rows all round the jaws. Like those of all Sharks, they are capable of being raised or depressed by means of muscles uniting them to the jaws, not being lodged in sockets as the teeth of cetaceous fish are.

The tongue is large; the eyes small; the pupil of a pale green; the irides white, spotted with brown: behind each eye is a semilunar orifice.

The back is of a pale ash color, and very rough; along the

* *Qua lignum et ebora poliuntur. Plinii lib. IX. c. 12.*

middle

middle is a prickly tuberculated line: the belly is white and smooth.

The pectoral fins are very large, and extend horizontally from the body to a great distance; they have some resemblance to wings, so writers have given this the name it bears in this work.

The ventral fins are placed in the same manner, and the double penis is placed in them, which forms another character of the males in this and the last genus.

The tail is bifurcated, the upper lobe rather the longest: not very remote from the end on the back are two fins.

40. PICKED. *Ἀκανθίας γαλῖος*. *Arist. Hist. an. Lib.* VI. c. 10. *Oppian Halieut.* I. 380.
Ἐκπυρτίς *Athenæi*, *Lib.* VII. p.
 L'Esquillats. *Belon*, 61.
Galeus acanthias. *Rondel.* 373. *Gesner pisc.* 607.
 Sperhaye, Dornhundert. *Schoneveldt*, 29.
Galeus acanthias five *spinax*. *Wil. Isb.* 56.
 The picked dog, or hound fish. *Rail syn. pisc.* 21.
Squalus spinax. *Lin. Syst.* 397. *Sq.* pinna ani nulla, dorsalibus spinosis, corpore teretiusculo. *Ibid.*
Sq. pinna ani nulla, corpore subrotundo. *Arted. synon.* 94.
Hai. Fann. Sunc. No. 295. *Gronov. Zooph.* 149.

NAME. **T**HE picked dog fish takes its name from a strong and sharp spine placed just before each of the back fins, distinguishing it at once from the rest of the *British* sharks.

DESCRIP. The nose is long, and extends greatly beyond the mouth, but is blunt at the end.

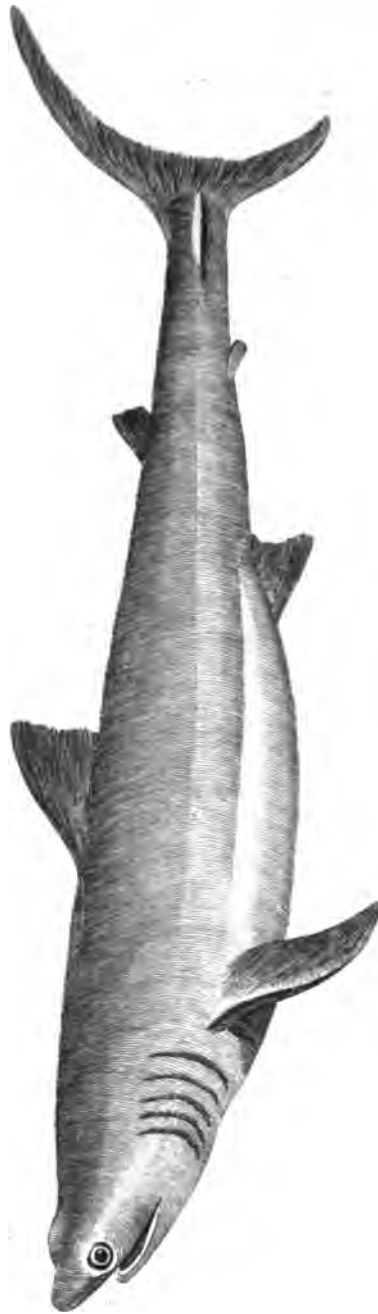
The teeth are disposed in two rows, are small and sharp, and bend from the middle of each jaw towards the corners of the mouth.

The

PL. XIII.

№ 41.

BASKING SHARK.



CLASS IV. B A S K I N G S H A R K .

89

The first back fin is placed nearer the head than the tail; the other is situated very near the latter.

The tail is finned for a considerable space beneath, and the upper part is much the longest.

The back is of a brownish ash color; the belly white.

It grows to the weight of about twenty pounds.

This species swarms on the coasts of *Scotland*, where it is taken, split and dried: and is a food among the common people. It forms a sort of internal commerce, being carried on women's backs, fourteen or sixteen miles up the country, and sold; or exchanged for necessaries.

*** With the anal fin.

SQUALUS maximus. *Sq. dentibus caninis, pinna dorsali anteriore majore.* *Syst. nat.* 400.

Brugden. Squalus maximus. Gunner

Act. Nidros. III. 33. *Tab.* II.
Sun-fish. Smith's hist. Cork, II. 292.
Hist. Waterford, 271.

41. BASKING.

THIS species has been long known to the inhabitants of the south and west of *Ireland* and *Scotland*, and those of *Caernarvonshire* and *Anglesea*; but having never been considered in any other than a commercial view, has till this time remained undescribed by any *English* writer; and what is worse, mistaken for and confounded with the *luna* of *Rondeletius*, the same that our *English* writers call the *sun-fish*.

The *Irish* and *Welsh* give it the same name, from its lying as if

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N

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to sun itself on the surface of the water; and for the same reason we have taken the liberty of calling it the *basking shark*. It was long taken for a species of whale, till we pointed out the branchial orifices on the sides, and the perpendicular site of the tail.

These are migratory fish, or at least it is but in a certain number of years that they are seen in multitudes on the *Welsh* seas, though in most summers a single and perhaps strayed fish appears. They inhabit the Northern seas, even as high as the *arctic* circle.

They visited the bays of *Caernarvonshire* and *Anglesea* in vast shoals, in the summers of 1756*, and a few succeeding years, continuing there only the hot months, for they quitted the coast about *Michaelmas*, as if cold weather was disagreeable to them.

They appear in the Firth of *Clyde*; and among the *Hebrides* in the month of *June*, in small droves of seven or eight; but oftener in pairs. They continue in those seas, till the latter end of *July*, when they disappear.

They had nothing of the fierce and voracious nature of the shark kind, and were so tame as to suffer themselves to be stroked: they generally lay motionless on the surface, commonly on their bellies, but sometimes, like tired swimmers, on their backs.

FOOD.

Their food seemed to consist entirely of sea plants, no remains of fish being ever discovered in the stomachs of numbers that were cut up, except some green stuff, the half digested parts of *algæ*, and the like. *Linnaeus* says, it feeds on *medusæ*.

At certain times they were seen sporting on the waves, and leaping with vast agility several feet out of the water. They swim very deliberately, with the dorsal fins above water.

* Some old people say they recollect the same sort of fish visiting these seas in vast numbers about forty years ago.

Their

CLASS IV. BASKING SHARK.

91

Their length was from three to twelve yards, and sometimes even longer.

Their form was rather slender, like others of the shark kind.

The upper jaw was much longer than the lower, and blunt at the end. The mouth placed beneath, and each jaw furnished with numbers of small teeth: those before were much bent, those more remote in the jaw, were conic and sharp pointed.

TEETH.

On the sides of the neck were five large transverse apertures to the gills.

On the back were two fins; the first very large, not directly in the middle, but rather nearer the head; the other small, and situated near the tail. On the lower part were five others; viz. two pectoral fins; two ventral fins, placed just beneath the hind fin of the back; and a small anal fin. Near these, the male had two genitals, as in other sharks; and between these fins was situated the pudendum of the female.

The tail was very large, and the upper part remarkably longer than the lower.

The color of the upper part of the body was a deep leaden; the belly white.

The skin was rough, like shagreen, but less so on the belly than the back.

Within side the mouth, towards the throat, was a very short sort of whalebone.

The liver was of a great size, but that of the female was the largest; some weighed above a thousand pounds, and yielded a great quantity of pure and sweet oil, fit for lamps, and also much used by the people who took them, to cure bruises, burns, and rheumatic complaints. A large fish has afforded to the captors a

LIVER.

OIL.

N 2

profit

profit of twenty pounds. They were viviparous, a young one about a foot in length being found in the belly of a fish of this kind.

The measurements of one, I found dead on the shore of *Loch Ranza* in the isle of *Arran*, were as follow. The whole length twenty seven feet, four inches : first dorsal fin, three feet ; second, one foot ; pectoral fin, four feet ; ventral, two feet : the upper lobe of the tail, five feet ; the lower, three.

They will permit a boat to follow them, without accelerating their motion, till it comes almost within contact; when a harpooneer strikes his weapon into them, as near to the gills as possible. But they are often so insensible, as not to move till the united strength of two men have forced in the harpoon deeper. As soon as they perceive themselves wounded, they fling up their tail and plunge headlong to the bottom ; and frequently coil the rope round them in their agonies, attempting to disengage the harpoon from them by rolling on the ground, for it is often found greatly bent.

As soon as they discover that their efforts are in vain, they swim away with amazing rapidity, and with such violence, that there has been an instance of a vessel of seventy tons having been towed away against a fresh gale. They sometimes run off with two hundred fathoms of line, and with two harpoons in them ; and will employ the fishers for twelve, and sometimes twenty four hours before they are subdued. When killed, they are either hawled on shore, or if at a distance from land, to the vessel's side. The liver (the only useful part) is taken out, and melted into oil in kettles provided for that purpose. A large fish will yield eight barrels of oil ; and two of worthless sediment.

The fishers observed on them a sort of leech of a reddish color,
and

and about two feet long, but which fell off when the fish was brought to the surface of the water, and left a white mark on the skin.

- | | | |
|--|---|-------------------|
| <p><i>Lamia?</i> <i>Arist. Hist. an. Lib. V. c. 5.</i>
 <i>IX. c. 37.</i>
 <i>Lamum.</i> <i>Oppian Halieut. I. 370. V. 36.</i>
 <i>Καρχαρίας</i> <i>Kuvv. Athen. Lib. VII. p.</i>
 <i>310.</i>
 <i>Lamia?</i> <i>Plinii, Lib. IX. c. 24.</i>
 <i>Le chien carcharien ou Perlz fisch de</i>
 <i>Norvege. Belon, 52, 87.</i></p> | <p><i>Lamia.</i> <i>Tiburo. Rondel. 489, 390.</i>
 <i>Canis Carcharias. Gesner pisc. 173.</i>
 <i>White Shark. Wil. Isb. 47. Raii syn.</i>
 <i>pisc. 18.</i>
 <i>Squalus carcharias. Sq. dorso plano</i>
 <i>dentibus ferratis. Lin. syst. 400.</i>
 <i>Arted. synon. 89. Gronov. Zooph. No.</i>
 <i>143.</i></p> | <p>42. WHITE.</p> |
|--|---|-------------------|

THIS grows to a very great bulk, *Gillius* says, to the weight of four thousand pounds; and that in the belly of one was found a human corps entire, which is far from incredible, considering their vast greediness after human flesh.

They are the dread of the sailors in all hot climates, where they constantly attend the ships in expectation of what may drop overboard; a man that has that misfortune perishes without redemption: they have been seen to dart at him, like gudgeons to a worm. A master of a *Guinea* ship informed me, that a rage of suicide prevailed among his new bought slaves, from a notion the unhappy creatures had, that after death they should be restored again to their families, friends, and country. To convince them at least that they should not re-animate their bodies, he ordered one of their corpses to be tied by the heels to a rope, and lowered into the sea, and though it was drawn up again as fast as the united force of

SIZE.

of the crew could be exerted, yet in that short space the sharks had devoured every part but the feet, which were secured at the end of the cord.

Swimmers very often perish by them; sometimes they lose an arm or leg, and sometimes are bit quite asunder, serving but for two morsels for this ravenous animal: a melancholy tale of this kind is related in a *West India* ballad, preserved in Doctor *Percy's* Reliques of ancient *English* Poetry*.

The mouth of this fish is furnished with (sometimes) a sixfold row of teeth, flat, triangular, exceedingly sharp at their edges, and finely serrated. We have one that is rather more than an inch and an half long. *Grew*† says, that those in the jaws of a shark two yards in length, are not half an inch, so that the fish to which mine belonged must have been six yards long, provided the teeth and body keep pace in their growth‡.

This dreadful apparatus, when the fish is in a state of repose, lie quite flat in the mouth, but when he seizes his prey, he has power of erecting them, by the help of a set of muscles that join them to the jaw.

The mouth is placed far beneath, for which reason these, as well as the rest of the kind, are said to be obliged to turn on their

* *Vol. I. 337.*

† *Rarities, 91.*

‡ Fossil teeth of this fish are very frequent in *Malta*, some of which are four inches long.

backs to seize their prey, which is an observation as ancient as the days of *Pliny* *.

The eyes are large; the back broad, flat, and shorter than that of other sharks. The tail is of a semilunar form, but the upper part is longer than the lower. It has vast strength in the tail, and can strike with great force, so that the sailors instantly cut it off with an axe as soon as they draw one on board.

The pectoral fins are very large, which enables it to swim with great swiftness.

The color of the whole body and fins is a light ash.

The ancients were acquainted with this fish; and *Oppian* gives a long and entertaining account of its capture. Their flesh is sometimes eaten, but is esteemed both coarse and rank.

Flam. *Ælian an. Lib. I. c. 16.*

Galeus glaucus. Rondelet. 378. Gesner

pisc. 609.

Blew shark. Wil. Lib. 49. Rati syn.

pisc. 20.

Squalus fossilis triangulari in extremo dorso, foraminibus nullis ad oculos.

Arted. syn. 98.

Squalus glaucus. Lin. syst. 401.

43. BLUE.

ÆLIAN relates strange things of the affection this species bears to its young: among others, he says, that it will permit the small brood, when in danger, to swim down its mouth, and take shelter in its belly: This fact has been since confirmed

* *Omnia autem carnivora sunt talia et supina vescantur. Lib. IX. c. 24.*

by.

by the observation of one of our best ichthyologists *, and is no more incredible, than that the young of the *Opossum* should seek an asylum in the ventral pouch of its parent, a fact too well known to be contested. But this degree of care is not peculiar to the blue shark, but we believe common to the whole genus.

This species frequents many of our coasts, but particularly those of *Cornwall* during the pilchard season, and is at that time taken with great iron hooks made on purpose.

DESCRIP. It is of an oblong form: the nose extends far beyond the mouth: it wants the orifices behind the eyes, which are usual in this genus: the nostrils are long, and placely transversely. *Artedi* remarks a triangular dent in the lower part of the back.

The skin is smoother than that of other sharks: the back is of a fine blue color; the belly of a silvery white.

Linnaeus says, that its teeth are granulated; for our part we must confess it is a fish that has not come under our examination, therefore hope to be favored with an accurate description from some naturalist, who lives on the coast it haunts.

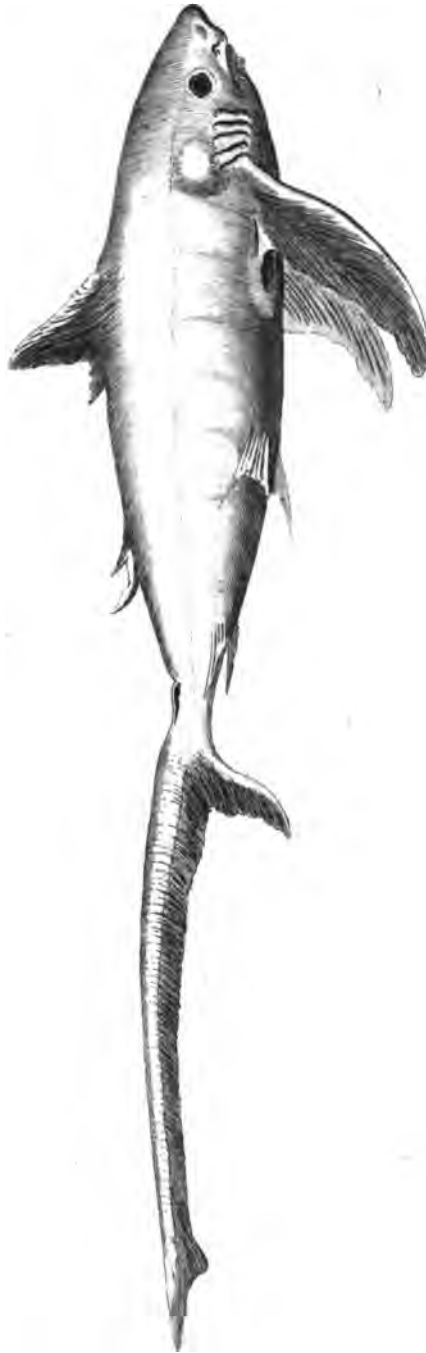
We may add, that *Rondeletius* says he was an eye-witness to its fondness for human flesh: that these fish are less destructive in our seas, is owing to the coolness of the climate, which is well known to abate the fierceness of some, as well as the venom of other animals.

* *Rondeletius*, 388.

XIV.

LONG TAILED SHARK.

Nº 44.



P. S. 1844

P. S. 1844

- Αλωνίξ?* *Arist. Hist. an. Lib. IX. c.* *Cercus Cavi opusc.* 110.
 37. *Ælian Var. Hist. Lib. I. c. 5.* *Sea Fox, or Ape. Wil. Idib. 54. Raii*
Oppian Halieut. I. 381. III. 144. *syn. pisc. 20.*
Vulpes Plinii Lib. IX. c. 43. *Squalus cauda longiore quam ipsam*
Singe de mer. Belon, 88. *corpus. Arted. syn. 96.*
Vulpes marina, Rondel. 337. Gesner *Sea Fox. Thresher. Borlase Cornwall.*
pisc. 1045. *265.*

44. LONG-TAILED.

THIS fish is most remarkable for the great length of the tail : the whole measure of that we had an opportunity of examining, was thirteen feet, of which the tail alone was more than six, the upper lobe extending greatly beyond the lower, almost in a strait line.

TAIL.

The body was round and short : the nose short but sharp pointed : the eyes large, and placed immediately over the corners of the mouth, which was small, and not very distant from the end of the nose.

The teeth are triangular, and small for the size of the fish, and placed in three rows.

The back ash color : the belly white : the skin universally smooth.

The ancients styled this fish *Αλωνίξ*, and *Vulpes*, from its supposed cunning. They believed, that when it had the misfortune to have taken a bait, it swallowed the hook till it got at the cord, which it bit off, and so escaped.

They are sometimes taken in our seas, and have been imagined to be the fish called the *Thresher*, from its attacking and beating

the *Grampus* with its long tail, whenever that species of whale rises to the surface to breathe.

45. TOPE. *Kuw?* *Arist. Hist. an. Lib. VI. c. 11.* The Tope. *Wh. Ish. 51. Raii syn.*
Canicula? *Plinii Lib. IX. c. 46.* *pisc. 20.*
Le chien de mer, ou Canicule. Balon, *Squalus naribus ori vicinis; foraminaibus*
65. *exiguus ad oculos. Arted. synon. 97.*
Canis galeus. Rondel. 377. Gesner pisc. *Squalus galeus. Lin. syst. 399. Gronow.*
167. *Zooph. No. 142.*

SIZE.

ONE that was taken on our coast the last year weighed twenty-seven pounds, and its length was five feet; but they grow to a greater size, some, according to *Artedius*, weighing an hundred pounds.

The color of the upper part of the body and fins was a light cinereous; the belly white.

The nose was very long, flat, and sharp pointed; beyond the nostrils semitransparent. The nostrils were placed very near the mouth.

Behind each eye was a small orifice. The teeth were numerous, disposed in three rows, small, very sharp, triangular, and serrated on their inner edge.

The first back fin was placed about eighteen inches from the head; the other very near the tail.

The tail finned beneath, the upper part ended in a sharp angle.

This species is said by *Rondeletius* to be very fierce and voracious, even to pursue its prey to the edge of the shore.

Its

Nº 47.



GREATER & LESSER SPOTTED SHARKS.

Nº 46.



P.L.V.

CLASS IV. SPOTTED DOG FISH.

59

Its skin and flesh has an offensive rank smell; therefore we suppose Mr. Dale gave it ironically the title of *Sweet William* *.

Νεσφας, Σαυδος, Αρεπας? *Arist. Hist. an. Lib. V. c. 10. VI. c. 10, 11.*
Πουδος? *Oppian Halieut. I. 381.*
La Rouffete commune. Belon, 65.
*Canicula Aristotelis. Rondel. 380. Ges-
 ner pisc. 168.*
Catulus major vulgaris. Wil. Iab. 62.

Greater Cat Fish: the Bounce. *Raii 46. SPOTTED.*
syn. pisc. 22.
*Squalus ex rufo varius, pinna ani me-
 dio inter anum et caudem pinnatum.*
Arted. syn. 97.
*Squalus canicula. Lin. syst. 399. Gre-
 nov. Zooph. No. 145.*
Greater Cat fish. Edw. 289.

THIS species being remarkably spotted, may be the same known to ancients by the names expressed in the synonyms; but they so frequently leave such slight notices of the animals they mention, that we are often obliged to add a doubtful mark (?) to numbers of them.

The weight of one we took was six pounds three ounces, and yet it measured three feet eight inches in length; so light are the cartilaginous fish in respect to their size.

The nose was short, and very blunt, not extending above an inch and an-half beyond the mouth. The nostrils were large, placed near the mouth, and covered with a large angular flap: the head very flat.

The eyes were oblong, behind each a large orifice opening to the inside of the mouth.

DESCRIP.

* *Hist. Harwich, 420.*

The teeth small, sharp, smooth at their sides, straight, and disposed in four rows.

Both the back fins were placed much behind, and nearer the tail than in common.

The tail was finned, and below extended into a sharp angle.

The color of the whole upper part of the body, and the fins, was brown, marked with numbers of large distinct black spots: some parts of the skin were tinged with red; the belly was white.

The whole was most remarkably round, and had a strong smell.

The tendrils that issue from each end of the purse of this fish, are much more delicate and slender than those of any other; are as fine as *Indian* grass, and very much resemble it.

The female of this species, and we believe of other sharks, is greatly superior in size to the male; so that in this respect there is an agreement between the fish and the birds of prey*. They bring about nineteen young at a time: the fishermen believe that they breed at all times of the year, as they scarce ever take any but what are with young.

To this kind may be added, as a meer variety, the

Catulus maximus. *Wil. Isb.* 63. *Raii syn. pisc.* 22.

Squalus cinereus, pinnis ventralibus discretis. *Arted. syn.* 97.

Squalus stellaris. *Lin. syst.* 399.

No. 145. *Gmelin. Zooph.*

The chief difference seeming to be in the color and the size of the spots; the former being grey, the latter fewer but larger than in the other.

* Vide *British Zoology*, Vol. I. 130.

CLASS IV. LESSER SPOTTED DOG FISH.

101

Le mufcarel? *Belon*, 64.

Catulus minor. *Wil. Lab.* 64.

Lesser Rough Hound, or Morgay. *Raii*
fish. pisc. 22.

Squalus dorso vario, pinnis ventralibus
concretis. *Arted. synon.* 97.

Squalus catulus. *Lin. fish.* 400. *Gra-*
nov. Zoonb. No. 144.

47. LESSER
SPOTTED.

THE weight of one that was brought to us by a fisherman was only one pound twelve ounces; the length two feet two inches: it is of a slender make in all parts.

The head was flat: the nostrils covered with a long flap: the nose blunt, and marked beneath with numerous small punctures: behind each eye was a small orifice: the back fins, like those of the former, placed far behind.

The ventral fins are united, forming as if it were but one, which is a sure mark of this species.

The tail finned like that of the greater dog fish.

The color is cinereous, streaked in some parts with red, and generally marked with numbers of small black spots; but we have observed in some that they are very faint and obscure.

The belly is white.

This species breeds from nine to thirteen young at a time, is very numerous on some of our coasts, and very injurious to the fisheries.

Exo

48. SMOOTH. Γατος ἄσπις? *Arist. Hist. an. Lib. VI.* Smooth or unprickly hound. *Raii syn.*
c. 10. Oppian, Lib. I. 380. pisc. 22.
Galeus laevis. Rondel. 375. Gesner pisc. Squalus dentibus obtusis seu granulosis.
608. Arted. syn. 93.
Mustelus laevis primus. Wil. Lab. Squalus mustelus. Lin. syst. 400. Gre-
60. nov. Zoonb. No. 142.

THIS species is called smooth, not that the skin is really so, but because it wants the spines on the back, which are the character of the second species, the Picked Dog.

The nose extends far beyond the mouth, and the end blunt: the holes behind the eyes are small; the back is less flat than that of others of this genus.

The first back fin is placed midway above the pectoral and ventral fins: the pectoral fins are small.

The tail forked, but the upper part is much the longest.

The teeth resemble those of a Ray, rough and sharp.

The color of the back and sides ash, and free from spots; the belly silvery.

The



SMOOTH SHARK.

The Porbeagle. *Borlase Cornwall*, 265. Feb. 26.

49. PORBEAGLE.

THE figure of this fish, engraved after a drawing by the Rev. Mr. *Jago**, is preserved in Doctor *Borlase's* Natural History of *Cornwall*.

As it is not attended with any account farther than that it is a *Cornish* fish, and a small species of shark, we are obliged to form the best description we can from the print.

The nose appears to be very long, slender towards the end, and sharp pointed. The mouth placed far beneath; the body very thick and deep, but extremely slender just at the setting on of the tail.

The first back fin is placed almost in the middle, the others pretty near the tail.

The belly very deep; the ventral and anal fins small.

The tail bifurcated; the upper fork a little longer than the lower.

* This gentleman was minister of *Loe*, in *Cornwall*, and appears to have been well acquainted with the History of Fish. He communicated figures of several of the *Cornish* fish, with a brief account of each to *Petiver*, at whose instance, as Doctor *Derham* tells us, in the preface to Mr. *Ray's* Itineraries, p. 69, he added them to the *Synopsis Avium et piscium*, p. 162. A few others of his drawings are also preserved in the Natural History of *Cornwall*, and seem to be executed with skill and accuracy.

THIS

50. BEAU-
MARIS.

THIS species was observed by my friend the Rev. Mr. *Hugh Davies* of *Beaumaris*, who favored me with the description, and an accurate drawing made from the fish taken in a neighboring wear.

The length was seven feet. The snout and body of a cylindrical form. The greatest circumference four feet eight inches.

The nose blunt. The nostrils small. The mouth armed with three rows of slender teeth*, flattened on each side, very sharp, and furnished at the base with two sharp processes. The teeth are fixed to the jaws by certain muscles, and are liable to be raised or depressed at pleasure.

The first dorsal fin was two feet eight inches distant from the snout, of a triangular form: the second very small, and placed near the tail.

The pectoral fins strong and large: the ventral and anal small.

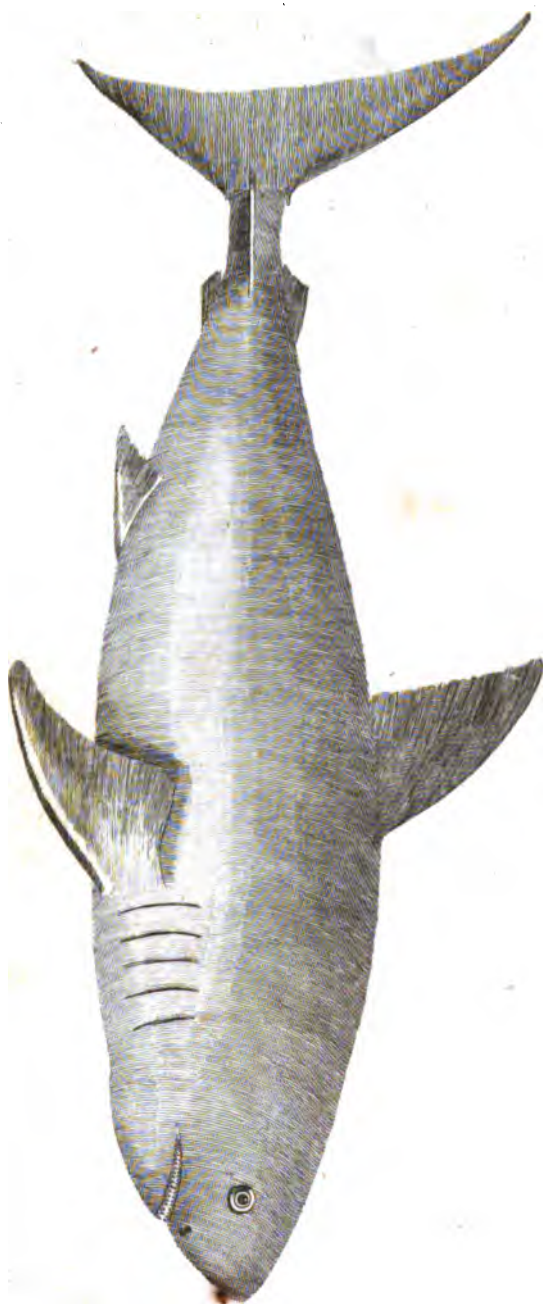
The space between the second dorsal fin and the tail much depressed; the sides forming an acute angle. Above and below was a transverse fossule or dent.

The tail was in the form of a crescent, but the horns of unequal lengths: the upper one foot ten inches; the lower one foot one.

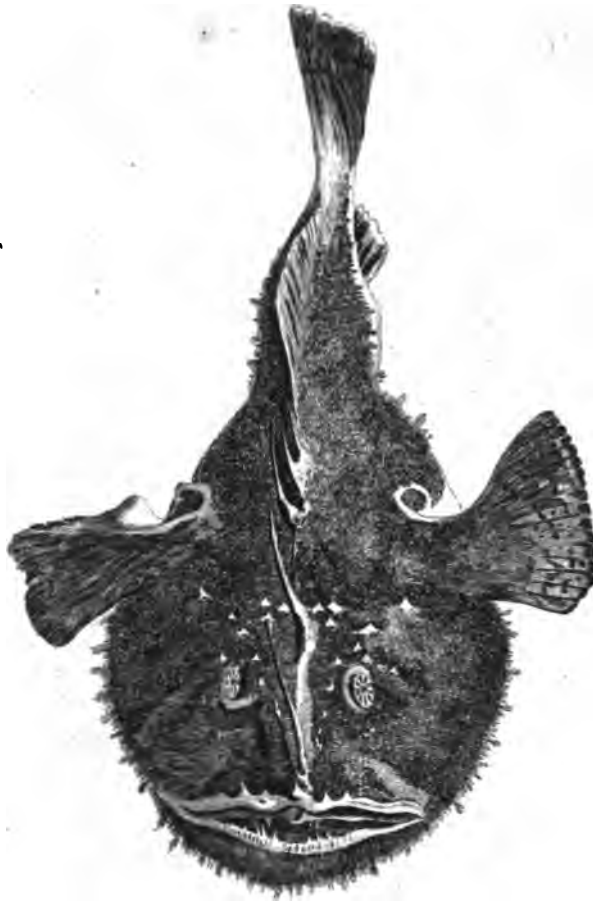
The whole fish was a lead color. The skin comparatively smooth, being far less rough than that of the lesser species of this genus.

* These teeth are often found fossil, and are styled by *Lluyd* *Ornithoglossum*, from their resemblance to a bird's tongue.

BEAUMARIS SHARK.



Nº 80.



COMMON ANGLER.

Wat Williams del

P. Mazell fecit

One aperture behind each ventral fin.

Large, flat, and circular head and body.

Teeth numerous and small in the jaws, roof of the mouth, and on the tongue.

Pectoral fins broad and thick.

VII.
ANGLER.

- Borpagos*. *Arist. Hist. an. Lib. IV. c.* 37. *Oppian Halieut. II.* 86. *Rana piscatrix*. *Ovid. Halieut.* 126. *Plinii Lib. IX. c.* 24. *La Grenouille de mer, ou peschenfe.* *Le Diable de mer, Bauldroy & Pescheteau. Belon, 77.* *Rana piscatrix. Rondel. 363. Gesner pisc. 813.* *Seheganis, seheteuffel, sehetode. Schenvelde, 59.* *Toad-fish, Frog-fish, or Sea-Devil. Wil. 12b. 85. Raii syn. pisc. 29.* *Lophius ore cirroso. Arted. syn. 87.* *Lophius piscatorius. Lin. f. 402.* *L. p. depressus capite rotundato. Faun. Suec. No. 298. Gronov. Zooph. No. 207.* 51. COMMON.

THIS singular fish was known to the antients by the name of *Borpagos**, and *Rana*, and to us by that of the fishing frog, for it is of a figure resembling that animal in a tadpole state. *Pliny* takes notice of the artifice used by it to take its prey: *Eminentia sub oculis cornicula turbato limo exerit, assultantes pisciculos attrahens, donec tam prope accedant, ut affliat.* "It puts forth the slender horns it has beneath its eyes, enticing by that means the little fish to play round, till they come within reach, when it springs on them*."

NAME.

The

* *Cicero*, in his second book *De Natura Deorum*, gives much the same account
Vol. III. P of

DESCRIP.

The fishing frog grows to a large size, some being between four and five feet in length; and we have heard of one taken near *Scarborough*, whose mouth was a yard wide. The fishermen on that coast have a great regard for this fish, from a supposition that it is a great enemy to the dog fish*, and whenever they take it with their lines set it at liberty.

It is a fish of very great deformity: the head is much bigger than the whole body, is round at the circumference, and flat above: the mouth of a prodigious wideness.

The under jaw is much longer than the upper: the jaws are full of slender sharp teeth: in the roof of the mouth are two or three rows of the same: at the root of the tongue, opposite each other, are two bones of an elliptical form, thick set, with very strong sharp teeth.

The nostrils do not appear externally, but in the upper part of the mouth are two large orifices that serve instead of them.

On each side the upper jaw are two sharp spines, and others are scattered about the upper part of the head.

Immediately above the nose are two long tough filaments, and on the back three others; these are what *Pliny* calls *cornicula*, and says it makes use of to attract the little fish. They seem to me like lines flung out for that end: I therefore have changed the old name of FISHING FROG for the more simple one of ANGLER.

of this fish: *Ranæ autem marinæ dicuntur obruere sese arena solere, et moveri propè aquam, ad quas, quasi ad escam, pisces cum accesserint, confici a ramis, atque consumi.*

* The bodies of these fierce and voracious fish are often found in the stomach of the *Fishing Frog*.

Along

Along the edges of the head and body are a multitude of short fringed skins, placed at equal distances.

The ventral fins are broad, thick, and fleshy, are jointed like arms, and within side divided into fingers.

The aperture to the gills is placed behind, each of these is very wide, so that some writers have imagined it to be a receptacle for the young in time of danger.

The back fin is placed very low near the beginning of the tail: the anal fin is placed beneath, almost opposite the former.

The body grows slender near the tail, the end of which is quite even.

The color of the upper part of this fish is dusky, the lower part white; the skin smooth.

Fishing Frog of Mount's-Bay. *Borlase Cornwall*, 266. *Tab. 27. fig. 6. Phil. 52. Lond. Transf. Vol. LIII. 170.*

THIS is a species at present unknown to us, except by description.

It is, says Doctor *Borlase*, of a longer form than the common kind: the head more bony, rough, and aculeated. It had no fin-like appendages round the head, but on each side the thinner part of the body, beginning beneath the dorsal fin, and reaching within two inches of the tail, was a series of them, each three quarters of an inch in length.

P 2

At

At the end of the pectoral fins were spines an inch and three quarters in length ; at the end of the tail others three quarters of an inch long.

OBLONG DIODON.



SHORT DIODON.



STURGEON.



Nº 63.

Nº 64.

One narrow aperture on each side.
The mouth placed far below, tubular and without teeth.
The body long, and often angular.

VIII. STURGEON.

Ononotus. *Athen. Lib. VIII.* 315.

Ammonotus? *Athen. p.* 294.

Acipenser? *Plinii Lib. IX. c.* 17.
Ovidii Halieut.?

L'Esturgeon. *Belon*, 89.

Acipenser. *Rondel. 410. Gesner pisc. 2.*

Sturio. *Gesner pisc.*

Stoer. *Schoneveldt*, 9.

Sturgeon. *Wil. Ich. 239. Rail syn.*

pisc. 112.

Schirk. Kram. 383.

*Acipenser corpore tuberculis spinosis
exasperato. Arist. syn.* 94.

Acipenser sturio. Linn. syst. 403. *Mus.*

Ad. Fred. 54. *Tab.* 18. *fig.* 2.

Stor. Faun. Suec. No. 299.

Seb. Mus. III. 101. *Tab.* 29. No. 19.

53. STURGEON.

THAT this is the *Ononotus* of *Dorion*, as quoted by *Athenaus*, is very probable, as well from the account he gives of its form, as of its nature. He says its mouth is always open; with which it agrees with the Sturgeon, and that it conceals itself in the hot months: this shews it to be a fish of a cold nature, which is confirmed by the history of the *European* fish of this species, given by Mr. *Forster**, in his Essay on the *Volga*, who relates that they are scarce ever found in that river in spring or summer, but in vast quantities in autumn and winter, when they crowd from the sea under the ice, and are then taken in great numbers.

* *Phil. Trans.* LVII. 352.

Whether

Whether the *acipenser* is the sturgeon of the moderns, may be doubted, otherwise *Ovid* would never have spoke of it as a foreign fish :

Tuque peregrinis, Acipenser, nobilis undis.

And, thou, a fish in foreign seas renowned.

It being well known that it is not uncommon in the *Mediterranean*, and even in the mouth of the *Tiber*, at certain seasons ; but this passage leaves us as much in the dark as to the particuliar species intended, by the word *acipenser*, as the description *Pliny* has given us ; for that philosopher relates, that its scales are placed in a contrary direction to those of other fish, being turned towards the mouth, which disagrees with the character of all that are known at present. Whatever fish it might be, it was certainly the same with the *Elops*, or *Helops*, as appears from *Pliny*, who makes it synonymous with the *acipenser* *, and from another line of the poet before-mentioned :

Et pretiosus Helops nostris incognitus undis.

The pretious *Helops* stranger to our seas.

MIGRA-
TORY.

The sturgeon annually ascends our rivers, but in no great numbers, and is taken by accident in the salmon nets. It seems a spiritless fish, making no manner of resistance when entangled, but is drawn out of the water like a lifeless lump. It is a fish that is seldom taken far out at sea, but frequents such parts as are not re-

* Quidam eum *Elopem* vocant. *Lib. IX. c. 17.*

mote

more from the æstuaries of great rivers. It is admired for the delicacy and firmness of its flesh, which is white as veal, and extremely good when roasted. It is generally pickled. The most we receive comes either from the *Baltic* rivers, or *North America*: those cured at *Pillau* have been, till of late, in the greatest repute; but through the encouragement given by the society instituted for promoting trade and manufactures, the sturgeon from our colonies begins to rival those of the *Baltic*.

Great numbers are taken during summer in the lakes *Frischebaff*, and *Curisb-baff* near *Pillau*, in large nets made of small cord. The adjacent shores are formed into districts, and farmed out to companies of fishermen, some of which are rented for six thousand guilders, or near three hundred pounds *per annum*.

They are found in vast abundance in the *American* rivers in *May*, *June*, and *July*, at which time they leap some yards out of the water, and falling on their sides, make a noise to be heard in still weather at some miles distance*.

Caviare is made of the roes of this, and also of all the other sorts of sturgeons, dried, salted, and packed up close. The best is said to be made of those of the *Sterlet* †, a small species frequent in the *Taïk* and *Volga*. *Icthyocolla* ‡, or ising-glass, is also made of the sound of our fish, as well as that of the others, but the *Beluga* affords the best §.

CAVIARE.

The

* *Catesby Carol. App.* 33. † *Strahlenberg's Hist. Russia*, 337.

‡ *Phil. Transf.* LVII. 354. A very small quantity is made from this species, and that only designed as presents to great men, as Mr. *Forster* assured me.

§ The antients were acquainted with the fish that afforded this drug. *Pliny lib.* XXXII. c. 7. mentions it under the name of *Icthyocolla*, and says, that the glue

DESCRIP.

The sturgeon grows to a great size, to the length of eighteen feet, and to the weight of five hundred pounds, but it is seldom taken in our rivers of that bulk. The largest we have known caught in those of *Great Britain* weighed four hundred and sixty pounds, which was taken about two years ago in the *Est*, where they are more frequently found than in our southern waters.

The nose is very long, slender, and ends in a point. The eyes are extremely small; the nostrils placed near them: on the lower part of the nose are four cirri or beards: the mouth is situated far beneath, is small, and unsupported by any jaw bones; neither has it any teeth. The mouth of a dead fish is always open. When alive it can close or open it at pleasure, by means of certain muscles.

The body is long, pentagonal, and covered with five rows of large bony tubercles: one row of which is placed on the back, and two on each side. The whole under side of the fish, from the end of the nose to the vent, is flat; on the back, not remote from the tail, is a single fin. It has besides two pectoral fins, two ventral, and one anal fin. The tail is bifurcated, but the upper part much longer than the lower.

The upper part of the body is of a dirty olive color; the lower part silvery; the middle of the tubercles white.

In the manner of breeding it is an exception among the cartilaginous fish, being like the bony fish oviparous, spawning in winter.

glue that was produced from it had the same title; and afterwards adds, that it was made out of the belly of the fish. The *Mario*, said by *Pliny lib. IX. c. 15.* to be found in the *Danube* and the *Borysthenes*, was certainly of this genus, a cartilaginous fish (*nullis ossibus spinisve interstitis*) resembling a small porpess (*Porcu-do marino similimus*;) and very probably may be the same with the *Beluga*, which, according to Mr. *Forster, Phil. Trans. LVII. 354.* has a short blunt nose, agreeing in that respect with the porpess.

A very

A very deep body, and as if cut off in the middle.
Mouth small.
Two teeth only in each jaw.

IX.
DIODON.

Sea-Fish from Mount's-Bay. *Borlase* Ostracion lævis. *Grenov. Zooph.* No. 54. OBLONG.
Cornwall, 268. tab. 26. fig. 7. 185.

RONDELETIUS has given this genus the synonym of *Orthogoriscus*, as if it was that which *Pliny** intended by the same name; but the account left us by that naturalist is so brief, that we do not think ourselves authorized to place it as a synonymous creature. He says no more than that it was the greatest of fish, and that it grunted when it was first taken, from which probably rose the name, for according to *Athenæus*, ὀρθόγορον † was that given to a young pig. We are inclined to believe, that this fish had escaped the notice of *Pliny*, otherwise he must have unavoidably made some remark on its striking figure.

This fish grows to a great bulk: that which was examined by *Salvianus* ‡ was above a hundred pounds in weight: and Doctor

SIZE.

* *Lib.* XXXII. c. 2.

† *Lib.* IV. p. 140.

‡ *Hist. Pisc.* 155.

Borlase mentions another taken at *Phymouth* in 1734, that weighed five hundred.

DESCRIP.

In form it resembles a bream, or some deep fish cut off in the middle. The mouth is very small, and contains in each jaw two broad teeth, with sharp edges.

The eyes are little; before each is a small semilunar aperture; the pectoral fins very small, and placed behind them. The dorsal fin and the anal fin are high, and placed at the extremity of the body: the tail fin is narrow, and fills all the abrupt space between those two fins.

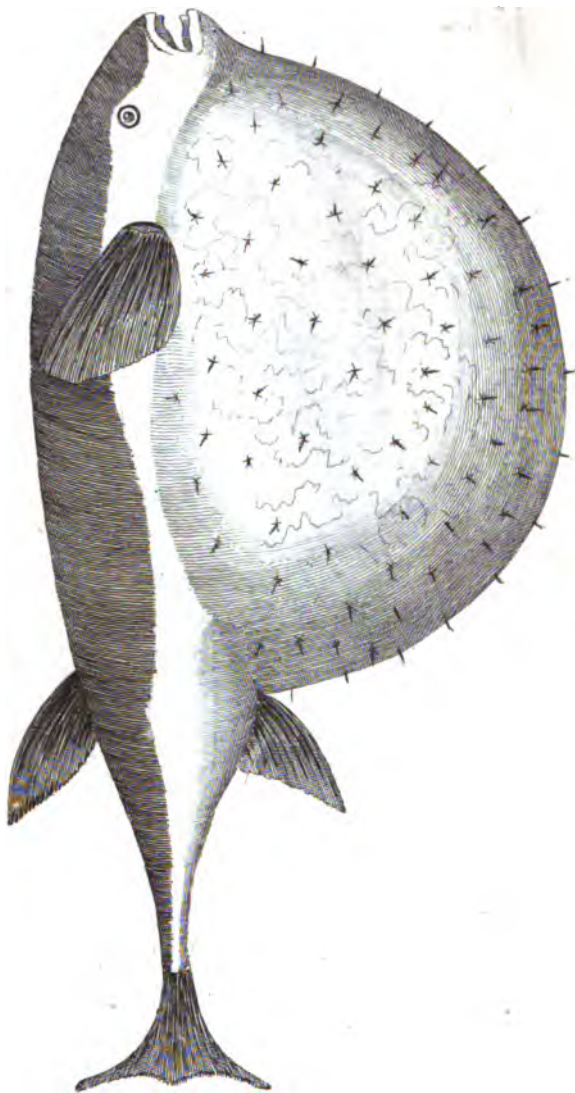
The color of the back is dusky, and dappled; the belly silvery: between the eyes and the pectoral fins are certain streaks pointing downwards. The skin is free from scales.

When boiled, it has been observed to turn into a glutinous jelly, resembling boiled starch when cold, and served the purposes of glue, on being tried on paper and leather. The meat of this fish is uncommonly rank: it feeds on shell-fish.

There seems to be no satisfactory reason for the old *English* name. Care must be taken not to confound it with the sun-fish of the *Iris*, which differs in all respects from this.

Orthogoriscus

GLOBE DIODON.



Orthorogiscus foveatus Luna piscis. *Rendel.*

424.

Mola Salviani, the Sun-fish. *Wil. Ictb.*

151. *Raii syn. pisc.* 51.

Ostracion cathoplateus subrotundus
inermis asper, pinnis pectoralibus
horizontalibus, foraminibus quatuor
in capite. *Arid. synon.* 83.

Tetraodon mola. *T. lævis*, compressus,

cauda truncata, pinna brevissima dor-
sali analique annexa. *Lin. f. 412.*

Gronov. Zooph. No. 186.

Brunnich pisc. Massil. No. 16.

Sun-fish, from Loo. *Borlase Cornwall,*
267. tab. 26. fig. 6.

55. SHORT.

THIS differs from the former, in being much shorter and deeper. The back and the anal fins are higher, and the aperture to the gills not semilunar, but oval. The situation of the fins are the same in both.

This species was taken off *Penzance*, and is engraved in Doctor *Borlase's* Natural History of *Cornwall*, from one of Mr. *Jago's* drawings. Both kinds are taken on the western coasts of this kingdom, but in much greater numbers in the warmer parts of *Europe*.

Mr. *Brunnich* informs us, that between *Antibes* and *Genoa*, he saw one of this species lie asleep on the surface of the water: a sailor jumped over-board and caught it.

Tetraodon lævigatus. *Lin. f. 411.*

56. GLOBE.

THIS species is common to *Europe* and *South Carolina*. As yet only a single specimen has been discovered in our seas; taken at *Penzance* in *Cornwall*.

Q 2

The

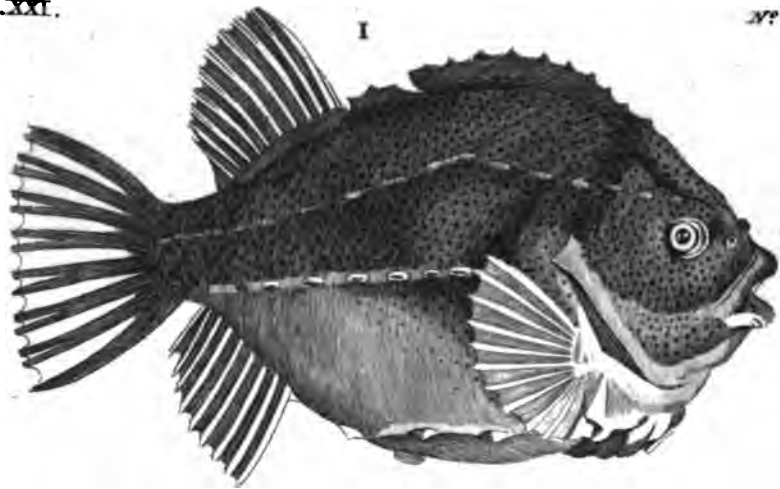
The length was one foot seven: the length of the belly, when distended, one foot; the whole circumference in that situation two feet six.

The form of the body is usually oblong, but when alarmed it has the power of inflating the belly to a globular shape of great size. This seems designed as a means of defence against fish of prey: as they have less means of laying hold of it; and are besides terrified by the numbers of spines with which that part is armed; and which are capable of being erected on every part.

The mouth is small: the irides white, tinged with red: the back from head to tail almost strait, or at least very slightly elevated; of a rich deep blue color. It has the pectoral, but wants the ventral fins. The dorsal is placed low on the back; the anal is opposite: the tail almost even divided by an angular projection in the middle: tail and fins brown.

The belly and sides are white, shagreened or wrinkled; and beset with innumerable small sharp spines, adhering to the skin by four processes.

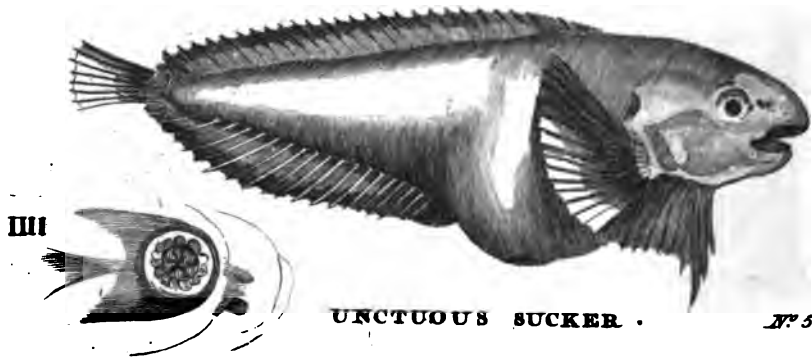
Thick



LUMP SUCKER.



III



UNCTUOUS SUCKER.

Thick body, arched back.

Ventral fins united.

Four branchiostegous rays.

X.
SUCKER.

Lumpus anglorum. *Gesner Paralip.* 25.
Seehaef, Haffpodde. *Schonevelde.* 41.
Lump, or Sea-Owl, *Scoti*: Cock paddle. *Wil. Lab.* 208. *Raii syn. pisc.*
77.
Cyclopterus. *Arid. Gen.* 87. *Gro-*

nov. Zool. No. 197.
Cyclopterus Lumpus. *C. corpore squa-*
mis ossibus angulatis. *Lin. Syst.* 414.
Sjurrygg-fisk, Stenbit, Quabblu. Faun.
Succ. No. 320.

57. LUMP.

THIS singular fish increases to the weight of seven pounds, and the length of nineteen inches: the shape of the body is like that of the bream, deep and very thick, and it swims edgeways. The back is sharp and elevated, the belly flat.

The irides are of a cherry color; lips, mouth, and tongue, of a deeper red: the jaws lined with innumerable small teeth; the tongue very thick; along the ridge of the back is a row of large bony tubercles; from above the eye to within a small space of the tail is another row; beneath that a third, commencing at the gills; and on each side the belly a fourth row, consisting of five tubercles like the other: the whole skin is rough, with small tubercles.

On the upper part of the back is a thick ridge improperly called a fin, being destitute of spines; beneath that is the dorsal fin, of a brownish hue, reaching within an inch of the tail: on the belly, just

DESCRIP.

just opposite, is another of the same form. The belly is of a bright crimson color: the pectoral fins are large and broad, almost uniting at their base. Beneath these is the part by which it adheres to the rocks, &c. It consists of an oval aperture, surrounded with a fleshy muscular and obtuse soft substance, edged with small thread-ed appendages, which concur as so many clasps: tail and vent fins purple.

By means of this part it adheres with vast force to any thing it pleases. As a proof of its tenacity we have known, that on flinging a fish of this species just caught, into a pail of water, it fixed itself so firmly to the bottom, that on taking the fish by the tail, the whole pail by that means was lifted, though it held some gallons, and that without removing the fish from its hold.

These fish resort in multitudes during spring to the coast of *Sutherland*, near the *Ord of Caithness*. The seals which swarm beneath, prey greatly on them, leaving the skins; numbers of which thus emptied float at that season ashore. It is easy to distinguish the place where seals are devouring this or any unctuous fish, by a smoothness of the water immediately above the spot: this fact is now established; it being a tried property of oil to still the agitation of the waves, and render them smooth*.

Great numbers of these fish are found in the *Greenland* seas during the months of *April* and *May*, when they resort near the shore to spawn. Their roe is remarkably large, which the *Greenlanders* boil to a pulp, and eat. They are extremely fat, which recommends them the more to the natives, who admire all oily food: they

* *Philos. Transf.* 1774. p. 445.

CLASS IV. UNCTUOUS SUCKER.

119

call them *Nipifets*, or *Cat-fish*, and take quantities of them during the season *.

This fish is sometimes eaten in *England*, being stewed like carp, but is both flabby and insipid.

Liparis? *Rondel.* 272. *Gesner pisc.* 483. Cyclopterus Liparis C. corpore nudo, 58. UNCTU-
Liparis nostras *Dunelm et Eborac.* Sea pinnis dorsali anali caudalique unitis. OVS.
Snail. *Wil Ictb. App.* 17. *Raii syn.* *Lin. syst.* 414.
pisc. 74. *Pet. Gaz. tab.* 51. *fig.* 5. Cyclogaster. *Gronov. Zooph.* No. 198.
Liparis. *Arted. synon.* 177.

THIS fish takes the name of sea snail from the soft and unctuous texture of its body, resembling that of the land snail. It is almost transparent, and soon dissolves and melts away.

It is found in the sea near the mouths of great rivers. We have seen it in *January* full of spawn.

The length is five inches: the color when fresh taken a pale brown, sometimes finely streaked with a darker; the shape of the body round, but near the tail compressed sideways: the belly is white and very protuberant. DESCRIP.

The head is large, thick, and round. There are no teeth in the mouth, but the jaws are very rough: the tongue very large: the eyes very small.

The orifice to the gills is very small. It has six branchiostegous rays.

* *Crantz's Hist. Greenland*, I. 96.

The

The pectoral fins are very broad, thin, and transparent, and almost unite under the throat. The first ray next the throat is very long, extends far beyond the rest, and is as fine as a hair. Over the base of each is a sort of operculum, or lid, ending in a point: this is capable of being raised or depressed at pleasure.

Behind the head begins the dorsal fin, which extends quite to the end of the tail: the ventral fin begins at the anus, and unites with the other at the tail.

Beneath the throat is a round depression of a whitish color, like the impression of a seal, surrounded with twelve small pale yellow tubera, by which it is probable it adheres to the stones like the other species.

59. JURA. Lesser Sucking Fish. *Berlese Nat. Hist. Cornwall*, 269. *Tab. xxv. fig. 28.* *ecuelle. Gouan pict. 177. Tab. 1. fig. 6, 7.*
Lepadogaster. Le Barbier ou Porte-

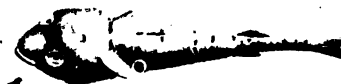
THIS species is found in *Cornwall*. I also discovered it in the Sound of *Jura*.

Its length is about four inches. The skin without scales, slippery, and of a dusky color. The body taper. The nose grows slenderer from the head, and ends round.

The teeth small. Before each eye is a small filament. Behind the eyes are two semilunar marks.

In the middle of the back an oval mark formed by small dots, of a whitish color. The dorsal fin lies near the tail, and consists of eleven

BIMACULATED SUCKER.



PL. XXII.

JURA SUCKER.

Nº 59.



CLASS IV. JURA SUCKER.

121

eleven rays : the anal is placed opposite, and has nine rays. The tail is rounded. The ventral have four rays, are joined by an intervening membrane with an oval depression in the middle. Beyond that is another strong membrane with a similar depression. By means of these instruments it adheres to stones or rocks.

Spa.



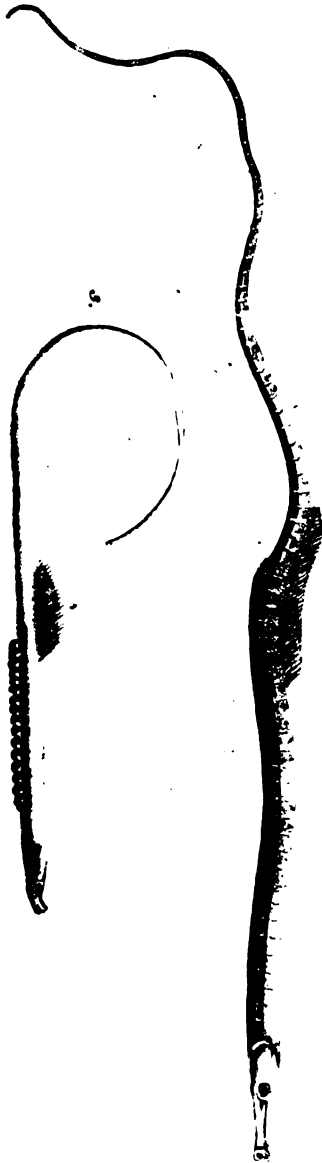
PIPE FISH.

Nº 62.

4



2.



Nº 61.

3.



Nº 63.

J. Magell del x/r

marked with numbers of bluish lines pointing from the back to the belly, which, in dried fish, seemed like the signs of so many joints. Those in a fresh subject ceased beyond the vent; all beyond that was spotted with brown.

The dorsal fin was narrow and thin, consisting of forty rays, was two inches long, and placed rather nearer to the head than the tail.

The vent was seven inches from the tip of the nose; the body to that orifice was of an equal thickness, but from thence tapered to a very small point, having no mark of a fin.

The pectoral fins had twelve rays; the anal three.

When this fish and the next species are dried, they appear covered with numbers of angular crusts, finely radiated from their centre.

As we want a generical name in our language for this genus, we call it the *Pipe Fish*, from its slender body.

L'Orneul marin. *Belon*, 446.

Acus secunda species, five, acus *Aristotelis*. *Rondel.* 229.

Typhle. *Gesner pisc.* 1025.

Trummer, Meherfchlang. *Schonevelds*, 11.

Acus *Aristotelis* seu secunda. *Wil. Lab.*

158. *Raii syn. pisc.* 47.

Syngnathus corpore medio heptagono,

caudâ pinnatâ. *Arted. synon.* 2.

Syngnathus acus. S. pinnis caudæ antepectoralibusque radiatis, corpore septem-angulato. *Lin. syst.* 416.

Kantnahl. Faun. Suec. No. 376.

Syngnathus cauda pinnata. Gronov.

Zooph. No. 172.

Sea-adder. *Borlase Cornw.* 267.

61. SHORTER.

THIS is shorter and thicker than the former, yet I have seen one of the length of sixteen inches. The middle of the body in some is hexangular, in others heptangular. *Linnaeus* constitutes

two species of them, his *Syngnathus Typhle*, and his *Syngnathus Acus*; but we join with Doctor Gronovius, in thinking them only varieties of the same fish.

The mouth is formed like that of the former: the irides are yellow: close behind the head are the pectoral fins, which are small and short.

On the lower part of the back is one narrow fin; beyond the vent the tail commences, which is long and quadrangular.

At the extremity is a fin round and radiated.

The body is covered with a strong crust, elegantly divided into small compartments.

The belly is white; the other parts brown.

Besides these species of hard-skinned Pipe fish, we have been informed, that the *Syngnathus Hippocampus* of *Linnaeus*, or what the *Englisch* improperly call the sea horse, has been found on the southern shores of this kingdom.

62. LITTLE. *Acui Aristotelis congener pisciculus,* caudaque carens. *Arted. synon. 2.*
pueris Cornubiensibus Sea Adder, Syngnathus ophidion. Lin. syst. 417.
Acus Lumbriciformis, aut Serpen- *Hafsnahl, Tangsnipa. Faun. Suec.*
tinum. Wil. IAb. 160. Raii syn. pisc. No. 375.
Syngnathus teres, pinnis pectoralibus

THE little pipe fish seldom exceeds five inches in length, is very slender, and tapers off to a point. It wants both the pectoral and tail fins; is covered with a smooth skin, not with a crust as the two former kinds are.

The

CLASS IV.

LESSER PIPE.

125

The nose is short and turns a little up; the eyes prominent.

On the back is one narrow fin.

This species is not viviparous: on the belly of the female is a long hollow, to which adhere the eggs, disposed in two or three rows. They are large, and not numerous.

The synonym of *Serpent* is used in several languages to express these fish: the *French* call one species *Orueul*, from a sort of snake not unlike the blindworm: the *Germans* call it *Meberschlange*; and the *Cornish*, the sea adder.

DIV.

D I V. III. B O N Y F I S H.

S E C T. I. A P O D A L.

XII.
E E L.

Body long, slender, and slippery.

Nostrils tubular.

Back, ventral, and tail fins, united.

Aperture to the gills small, and placed behind the pectoral fins.

Ten branchiostegous rays.

63. COMMON. *Erythrae. Arist. Hist. an. Lib. IV. c. 11.* The Eel. *Wil. pisc.* 109. *Rail syn. pisc.*
 VI. 14. 16. *Oppian Halient. I. 516.* 37.
 IV. 450. *Muraena unicolor maxilla inferiore lon-*
Anguilla Plinii Lib. IX. c. 21. *giore. Arted. syn.* 39.
L' Anguille. Belon, 291. Obs. 55. *Muraena anguilla. Lin. syst.* 426. *Gro-*
Anguilla. Rondel. fluv. 198. Gesner *nov. Zooph.* No. 166.
pisc. 40. *Ahl. Faun. Suec. No. 301. Aal. Kram.*
Acl. Schonevelds, 14. 387.

THE eel is a very singular fish in several things that relate to its natural history, and in some respects borders on the nature of the reptile tribe.

It

It is known to quit its element, and during night to wander along the meadows, not only for change of habitation, but also for the sake of prey, feeding on the snails it finds in its passage.

During winter it beds itself deep in the mud, and continues in a state of rest like the serpent kind. It is very impatient of cold, and will eagerly take shelter in a whisp of straw flung into a pond in severe weather, which has sometimes been practised as a method of taking them. *Albertus** goes so far as to say, that he has known eels to shelter in a hay-rick, yet all perished through excess of cold.

It has been observed, that in the river *Nyne*†, there is a variety of small eel, with a lesser head and narrower mouth than the common kind, that it is found in clusters in the bottom of the river, and is called the *Bed-eel*: these are sometimes roused up by violent floods, and are never found at that time with meat in their stomachs. This bears such an analogy with the clustering of blindworms in their quiescent state, that we cannot but consider it as a further proof of a partial agreement in the nature of the two genera.

The ancients adopted a most wild opinion about the generation of these fish, believing them to be either created from the mud, or that the scrapings of their bodies which they left on the stones, were animated and became young eels. Some moderns gave into these opinions, and into others that were equally extravagant. They could not account for the appearance of these fish in ponds that never were stocked with them, and that were even so remote as to

GENERA-
TION.

* *Gesner pisc.* 45.

† *Morton's Hist. Northampt.* 419. *Pliny* observes, that the eels of the lake *Bennacus* collect together in the same manner in the month of *October*, possibly to retreat from the winter's cold. *Lib. ix. c. 22.*

make

make their being met with in such places a phenomenon that they could not solve. But there is much reason to believe, that many waters are supplied with these fish by the aquatic fowl of prey, in the same manner as vegetation is spread by many of the land birds, either by being dropped as they carry them to feed their young, or by passing quick thro' their bodies, as is the case with herons; and such may be occasion of the appearance of these fish in places where they were never seen before. As to their immediate generation, it has been sufficiently proved to be effected in the ordinary course of nature, and that they are viviparous.

VIVIPAROUS.

They are extremely voracious, and very destructive to the fry of fish.

No fish lives so long out of water as the eel: it is extremely tenacious of life, as its parts will move a considerable time after they are flayed and cut into pieces.

DESCRIP.

The eel is placed by *Linnaeus* in the genus of *Murena*, his first of the apodal fish, or such which want the ventral fins.

The eyes are placed not remote from the end of the nose: the irides are tinged with red: the under jaw is longer than the upper: the teeth are small, sharp, and numerous: beneath each eye is a minute orifice: at the end of the nose two others, small and tubular.

The fish is furnished with a pair of pectoral fins, rounded at their ends. Another narrow fin on the back, uniting with that of the tail; and the anal fin joins it in the same manner beneath.

Behind the pectoral fins is the orifice to the gills, which are concealed in the skin.

SILVER
EELS.

Eels vary much in their colors, from a sooty hue to a light olive green;

green; and those which are called silver eels, have their bellies white, and a remarkable clearness throughout.

Besides these there is another variety of this fish known in the *Thames* by the name of *Grigs*, and about *Oxford* by that of *Grigs* or *Gluts*. These are scarce ever seen near *Oxford* in the winter, but appear in spring, and bite readily at the hook, which common eels in that neighbourhood will not. They have a larger head, a blunter nose, thicker skin, and less fat than the common sort; neither are they so much esteemed, nor do they often exceed three or four pounds in weight.

GRIGS.

Common eels grow to a large size, sometimes so great as to weigh fifteen or twenty pounds, but that is extremely rare. As to instances brought by *Dale* and others, of these fish encreasing to a superior magnitude, we have much reason to suspect them to have been congers, since the enormous fish they describe, have all been taken at the mouths of the *Thames* or *Medway*.

The eel is the most universal of fish, yet is scarce ever found in the *Danube*, tho' it is very common in the lakes and rivers of *Upper Austria*.

The *Romans* held this fish very cheap, probably from its likeness to a snake.

Vos anguilla manet longæ cognata colubræ*,
Vernula riparum pinguis torrente cloaca.

For you, is kept a sink-fed snake-like eel.

On the contrary, the luxurious *Sybarites* were so fond of these fish, as to exempt from every kind of tribute the persons who sold them †.

* *Juvenal. Sat. v. 103.*

† *Athenaus. Lib. xii. p. 521.*

64. CONGER. *Korymbos*. *Arist. Hist. an. lib. I. &c.* *Isab. HI. Rasi syn. pisc. 37.*
Korymbos. *Oppian Halieut. I. 113. 521.* *Muraena* supremo margine pinnæ dorfa-
 Conger. *Ovidii Halieut. 115. Plinii* lis nigro. *Arted. synon. 40.*
lib. IX. c. 16. 20. *Muraena* Conger. M. rostro tentaculis
 Le Congre. *Belon 159.* duobus, linea laterali ex punctis al-
 Conger. *Rondel. 394. Gesner pisc. 290.* bida. *Lin. syst. 426.*
 The Conger, or Conger Eel. *Wil.*

SIZE.

THE conger grows to a vast size. Doctor *Borlase*, to whom we are obliged for several informations relating to this species, assures us, that they are sometimes taken near *Mount's-Bay* of one hundred pounds weight *.

DESCRIP.

They differ from the common eel in the following particulars :
 1. Their color in general is more dark. 2. Their eyes much larger in proportion. 3. The irides of a bright silvery color. 4. The lower jaw is rather shorter than the upper. 5. The side line is broad, whitish, and marked with a row of small spots; Mr. *Ray* says a double row, but we did not observe it in the fish we examined. 6. The edges of the dorsal and anal fins are black. 7. They have more bones than the common eel, especially along the back quite to the head. 8. They grow to a much larger size.

As to the distinction that Mr. *Ray*, and other writers, make of the small beards at the end of the nose, we think it not to be depended on, being sometimes found in both kinds, and sometimes entirely wanting.

* We have heard of some taken near *Scarborough* that were ten feet and a half long, and eighteen inches in circumference in the thickest part.

We

We believe they generate like the fresh-water species: innumerable quantities, of what are supposed to be their fry, come up the *Severn* about the month of *April*, preceding the *Shads*, which it is conjectured migrate into that river to feed on them: they are called *Elvers*. They quite swarm during their season, and are taken in a kind of sieve made of hair-cloth, fixed to a long pole; the fisherman standing on the edge of the water during the tide, puts in his net as far as he can reach, and drawing it out again takes multitudes at every sweep, and will take as many during one tide as will fill a bushel. They are dressed, and reckoned very delicate.

ELVERS.

Congers are extremely voracious, preying on other fish, and on crabs at the time they have lost their shell, and are in a soft state. They and eels in general are also particularly fond of carcases of any kind, being frequently found lodged in such that are accidentally taken up.

These fish are an article of commerce in *Cornwall*; numbers are taken on that coast, and exported to *Spain* and *Portugal*, particularly to *Barcelona*. The quantities that were sent from *Mount's-Bay* for five years, were as follow:

	<i>Cwt.</i>	<i>qr.</i>	<i>lb.</i>
1756	46	0	13
1757	164	0	21
1758	164	1	3
1759	213	0	3
1760	71	3	0

Some are taken by a single hook and line, but (because that way is tedious, and does not answer the expence of time and labour) CAPTURE.
S 2
they

they are chiefly caught by *Bulkers*, which are strong lines five hundred feet long, with sixty hooks, each eight feet asunder, baited with pilchards or mackrel: the *Bulkers* are sunk to the ground by a stone fastened to them: sometimes such a number of these are tied together as to reach a mile.

We have been told that the fishermen are very fearful of a large conger, lest it should endanger their legs by clinging round them; they therefore kill them as soon as possible by striking them on the navel.

CURE.

They are afterwards cured in this manner: they are slit, and hung on a frame till they dry, having a considerable quantity of fat, which it is necessary should exude before they are fit for use. It is remarkable that a conger of a hundred weight will waste by drying to twenty-four pounds; the people therefore prefer the smallest, possibly because they are soonest cured. During the process there is a considerable stench; and it is said that in the fishing villages the poultry are fed with the maggots that drop from the fish.

The *Portuguese* and *Spaniards* use those dried congers after they have been ground into a powder, to thicken and give a relish to their soups. We think they are sold for about forty shillings the quintal, which weighs one hundred and twenty-six pounds.

A fishery of congers would be of great advantage to the inhabitants of the *Hebrides*. Perhaps they would at first undertake it with repugnancy, from their absurd aversion to the eel kind.

Blunt

WOLF FISH.

Dr. G.



P. Mayall del. W. Smith sculp.

Blunt head: long body.

One dorsal fin reaching almost from the head to the tail.

Fore teeth conic and large.

Grinders flat and round.

Seven branchiostegous rays.

XIII.
WOLF
FISH.

Anarrhicas. *Gesner Paralip.* 4.

Lupus marinus Caii opusc. 113.

Lupus marinus nostras, quem incola

Wolff. Schonevelds, 45. Tab. 5.

Cat-Fish. Sib. Scot. Ill. 25. Tab. 16.

Wolf Fish, Sea Wolf, or Woof. Wil.

Tab. 130. Raii syn. pisc. 40.

Steen-bider. Pontop. Norway, II. 151.

Kigutlik i. e. dentatus. Crantz's Greenland.

I. 96.

Anarrhicas. Arted. synon. 39.

Anarrhicas Lupus. Lin. syst. 430.

Zee Wolf. Gronov. Mus. No. 44.

Zeeb. No. 400.

65. RAVE-
NOUS.

THIS fish seems to be confined to the northern parts of the globe. We find it in the seas of *Greenland*, in those of *Iceland** and *Norway*, on the coasts of *Scotland*, and of *Yorkshire*, and lastly, in that part of the *German* ocean, which washes the shores of *Holland*, the most southern of its haunts we can with any certainty mention.

PLACE.

It is a most ravenous and fierce fish, and when taken fastens on any thing within its reach: the fishermen dreading its bite, endeavor as soon as possible to beat out its fore teeth, and then kill it by striking it behind the head. *Schonevelds* relates, that its bite is

* Where it is called *Steinbeisser*. *Schonevelds, 45.*

so hard that it will seize on an anchor, and leave the marks of its teeth in it; and the *Danish* and *German* names of *Steenbider* and *Steinbeisser*, express the sense of its great strength, as if it was capable of crushing even stones with its jaws.

FOOD.

It feeds almost entirely on crustaceous animals, and shell fish, such as crabs, lobsters, prawns, muscles, scollops, large whelks, &c. these it grinds to pieces with its teeth, and swallows with the lesser shells. It does not appear they are dissolved in the stomach, but are voided with the fœces, for which purpose the aperture of the anus is wider than in other fish of the same size.

It is full of roe in *February*, *March*, and *April*, and spawns in *May* and *June*.

This fish has so disagreeable and horrid an appearance, that nobody at *Scarborough* except the fishermen will eat it, and they prefer it to holibut. They always before dressing take off the head and skin.

SIZE.

The sea wolf grows to a large size: those on the *Yorkshire* coast are sometimes found of the length of four feet, and, according to Doctor *Gronovius*, have been taken near *Shetland* seven feet long, and even more. That which we examined was three feet two inches and an half from the tip of the nose to the end of the tail: the length of the head was eight inches, from the gills to the vent, ten; from thence to the tip of the tail, twenty and one half.

The circumference of the head was seventeen inches, at the shoulders twenty, but near the tail only four and a half.

Its weight was twenty pounds and a quarter.

The head is a little flattened on the top: the nose blunt; the nostrils very small; the eyes small, and placed near the end of the nose. *Irides* pale yellow.

The

The teeth are very remarkable, and finely adapted to its way of life. The fore teeth are strong, conical, diverging a little from each other, stand far out of the jaws, and are commonly six above, and the same below, though sometimes there are only five in each jaw: these are supported within-side by a row of lesser teeth, which makes the number in the upper jaw seventeen or eighteen, in the lower eleven or twelve.

The sides of the under jaw are convex inwards, which greatly adds to their strength, and at the same time allows room for the large muscles with which the head of this fish is furnished.

The *dentes molares*, or grinding teeth of the under jaw, are higher on the outer than the inner edges, which inclines their surfaces inward: they join to the canine teeth in that jaw, but in the upper are separate from them.

In the centre are two rows of flat strong teeth, fixed on an oblong basis upon the bones of the palate and nose.

These and the other grinding teeth are often found fossil, and in that state called *Bufonites*, or *Toad-stones*: they were formerly much esteemed for their imaginary virtues, and were set in gold, and worn as rings.

BUFONITES.

The two bones that form the under jaw are united before by a loose cartilage, which mechanism admitting of a motion from side to side, most evidently contributes to the design of the whole, viz. a facility of breaking, grinding, and comminuting its testaceous and crustaceous food. At the entrance of the gullet, above and below, are two echinated bones: these are very small, being the less necessary, as the food is in a great measure comminuted in the mouth by aid of the grinders.

The body is long, and a little compressed sideways; the skin smooth and slippery: it wants the lateral line.

The

The pectoral fins consist of eighteen rays, are five inches long, and seven and a quarter broad.

The dorsal fin extends from the hind part of the head almost to the tail; the rays in the fresh fish are not visible.

The anal fin extends as far as the dorsal fin.

The tail is round at its end, and consists of thirteen rays.

COLOR.

The sides, back, and fins, are of a livid lead color; the two first marked downwards with irregular obscure dusky lines: these in different fish have different appearances. The young are of a greenish cast, resembling the sea wrack, which they reside amongst for some time after their birth.

We think ourselves much indebted to Mr. *Travis*, Surgeon, at *Scarborough*, for his ingenious remarks on this fish, as well as on several others that frequent that coast, being a gentleman much skilled in ichthyology, and extremely liberal in communicating his knowledge.

Head

H. XXV.

MORRIS.



Fig 67.

LAUNCE.



Fig 66.

Fig 66.

Head slender.

Body long and square.

Upper lip doubled in.

Dorsal and anal fin reaching almost to the tail.

Seven branchiostegous rays.

XIV.
LAUNCE.

Ammodytes piscis, ut nos vocavimus Sand Eels, or Launces. *Raii syn. pisc.* 66. SAND.
pro anglice Sandilz. *Gesner paralp.* 3. 38, 165.
 Tobian, vel Tobias Sandtspiring. *Ammodytes. Arad. synon.* 29.
Schoneveldt, 76. *Ammodytes Tobianus. Lin. syst.* 430.
Ammodytes Gesneri, Wil. Ictb. 113. *Tobis. Faun. Suec.* 302. *Gronov. Zooph.*
 No. 404.

THE launce is found on most of our sandy shores during some of the summer months: it conceals itself on the recess of the tides beneath the sand, in such places where the water is left, at the depth of about a foot, and are in some places dug out, in others drawn up by means of a hook contrived for that purpose. They are commonly used for baits for other fish, but they are also very delicate eating.

These fish are found in the stomachs of the *Porpessæ*, an argument that the last roots up the sand with its nose as hogs do the ground.

They grow sometimes the length of nine or ten inches: the females are longer and slenderer than the males.

SIZE.

The form of the body is square, the sides are rounded, and the angles not sharp: it is nevertheless long and slender.

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The

The head is small and taper; the under-jaw much longer than the upper: the upper jaw is moveable, capable of being protruded, so that when open the gape is very wide.

The irides are silvery.

The dorsal fin runs almost the whole length of the back, is very narrow, and consists of fifty-eight rays: the pectoral fins small, and have twelve: the anus is placed much nearer the tail than the head, is narrow, and extends almost to the former.

The tail is forked, but the lobes rounded at their extremities.

The color of the back is blue, varying with green: on each side the back is a narrow dusky line or two. The sides and belly are silvery, the lateral line straight.

Small

Small head.
 Body extremely thin, compressed sideways.
 No pectoral fins.

XV.
 MORRIS.

Leptocephalus. Gronov. *Zooph.* No. 409. tab. 13. fig. 3.

67. ANGLE-
 SEA.

THIS species was discovered in the sea near *Holyhead* by the late Mr. *William Morris*, and, in memory of our worthy friend, we have given it his name. On receiving it from Mr. *Morris*, we communicated it to that accurate Ichthyologist, Doctor *Laurence Theodore Gronovius*, of *Leyden*, who has described it in his *Zoophylacium*, under the title of *Leptocephalus*, or small head.

The length was four inches; the head very small; the body compressed sideways, extremely thin, and almost transparent, about the tenth of an inch thick, and in the deepest part about one-third of an inch; towards the tail it grew more slender, and ended in a point; towards the head it sloped down, the head lying far beneath the level of the back.

DESCRIP.

The eyes large; the teeth in both jaws very small.

The lateral line strait: the sides marked with oblique strokes, that met at the lateral line.

The aperture to the gills large.

T 2

It

It wanted the pectoral, ventral, and caudal fins: the dorsal fin was extremely low, and thin, extending the whole length of the back very near the tail. The anal fin was of the same delicacy, and extended to the same distance from the anus.

The

Pl. XXVI.



SWORD - FISH.

Pl. 68.

The upper jaw extending to a great length, hard, slender,
and pointed.

No teeth.

Eight branchiostegous rays.

Slender body.

XVI.
SWORD
FISH.

- Xipias*. *Arist. Hist. an. lib. II. c. 13.* *Xipias, i. e. Gladius piscis. Gesner 68. SICILIAN*
VIII. c. 19. Oppian Halieut. lib. II. *pisc. 1049. Cati opusc. 104.*
462. III. 442. *Schwert-fische. Schonewelde, 35. Sword*
Xipias. Ovid Halieut. 97. *Fish. Wil. Ictb. 161. Raii syn. pisc.*
Xipias, i. e. Gladius Plinii lib. XXXII. *52.*
c. 2.* *Xipias. Arted. Synon. 47.*
L'Heron de mer, ou grand Espadaz. *Xipias Gladius. Lin. syst. 432.*
Belon, 102. *Sword-fish. Faun. Sinc. No. 303.*
Xipias. Rendel. 251.

THIS fish sometimes frequents our coasts, but is much more
common in the *Mediterranean* sea, especially in the part that
separates *Italy* from *Sicily*, which has been long celebrated for it:
the promontory *Pelorus**, now *Capo di Faro*, was a place noted for
the resort of the *Xipias*, and possibly the station of the *speculatores*,
or the persons who watched and gave notice of the approach of the
fish. PLACE.

The antient method of taking them is particularly described by CAPTURE.
Strabo†, and agrees exactly with that practised by the moderns.

* *Athenaeus*, 314.

† *Lib. I. p. 16.*

A man

A man ascends one of the cliffs that overhangs the sea: as soon as he spies the fish, he gives notice either by his voice, or by signs, of the course it takes. Another, that is stationed in a boat, climbs up the mast, and on seeing the sword fish, directs the rowers towards it. As soon as he thinks they are got within reach, he descends, and taking a spear in his hand, strikes it into the fish, which, after wearying itself with its agitation, is seized and drawn into the boat. It is much esteemed by the *Sicilians*, who buy it up eagerly, and at its first coming into season give about six-pence *English* per pound. The season lasts from *May* till *August* *. The antients used to cut this fish into pieces, and salt it, whence it was called *Tomus Tburianus* †, from *Tburii*, a town in the bay of *Tarentum*, where it was taken and cured.

Kircher, in his *Musurgia*, has preserved a strange incantation used by the *Sicilian* fishermen, at the capture of the *Pesce Spada*, as they call it, which is expressed in the following unintelligible jargon:

Mamassu di pajanu,
Paletta di pajanu,
Majussu di signela,
Palettu di paenu pale,
Pale la stagnetta,
Mancuta signeta.
Pro nassu, vardu, pressu da
Visu & da terra.

But this use of charmed words is not confined to *Sicily*; the *Irish*

* *Ray's Travels*, I. 271.

† *Tomus Tburianus*, quem alii *Xiphiam* vocant. *Plinii lib. XXXII. c. 11.*

have

CLASS IV.

S W O R D F I S H.

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have their song at the taking of the razor shell; and the *Cornish* theirs, at the taking of the whistle fish.

The sword fish is said to be very voracious, and that it is a great enemy to the Tunny, who (according to *Belon*) are as much terrified with it as sheep are at the sight of a wolf.

*Ac durus Xiphias, istu non mitior ensi;
Et pavidu magno fugientes agmine Thunni.*

Ovid. *Halieut.* 97.

Sharp as a sword the *Xiphias* does appear;
And crowds of flying *Tunnies* struck with fear.

It grows to a very large size; the head of one, with the pectoral fins, found on the shore near *Laugharn*, in *Caermarthenshire*, alone weighing seventy-five pounds: the snout was three feet long, rough, and hard, but not hard enough to penetrate ships and sink them, as *Pliny* pretends*.

SIZE.

The snout is the upper jaw, produced to a great length, and has some resemblance to a sword, from whence the name. It is compressed at the top and bottom, and sharp at the point. The under jaw is four times as short as the upper, but likewise sharp pointed. The mouth is destitute of teeth.

SNOUT.

The body is slender, thickest near the head, and growing less and less as it approaches the tail.

The skin is rough, but very thin: the color of the back is dusky, of the belly silvery.

* *Xiphiam, id est, Gladium, rostro mucronato esse, ab hoc. navis profectas mergi in oceano. Plin. Lib. XXXII. c. 11.*

The

The dorsal fin begins a little above the gills, and extends almost to the tail: it is highest at the beginning and the end, but very low in the middle: a little above the tail, on each side, the skin rises and forms two triangular protuberances, not unlike the spurious fins of the tunny.

The pectoral fins are long, and of a scythe-like form, and their first rays the longest.

The anus is placed at the distance of one-third part of the body from the tail; beneath are two anal fins.

The tail is exactly of the shape of a crescent.



S E C T. II. J U G U L A R.

Upper lip doubled.

Eyes near each other.

Two breathing apertures on the hind part of the head.

First rays of the dorsal fin very long.

XVII.
DRAGO-
NET.

- La tierce espece de Exocetus? *Belon*, 218. *Callionymus* Lyra, C. dorfalis prioris radiis longitudine corporis. *Lin. fyst.* 433. *Faun. Suec.* No. 110. 69. GEMME-
Dracunculus. Rondel. 304. 433. *Faun. Suec.* No. 110. ous.
Dracunculus, aranei species altera. Gesner pisc. 80. *Uranoscopus. Grönov. Zooph.* No. 206.
Dragon fish. Marten's Spitzberg, 123. *Floy-fiske. Pentop. Norway,* II. III.
Yellow Gurnard. Phil. Transf. No. 293. *Dracunculus marinus. Borlase Corn-*
Lyra Harvicensis. Pet. Gax. Tab. 22. *wall,* 270. *Seb. Musf.* III. 92. *Tab.*
Dale Harwich, 431. 30. *fig.* 7.

LINNÆUS has given this genus the name of *Callionymus*, a fish mentioned by several of the antients; but the notices they have left of it are so very slight, as to render it difficult to determine what species they intended. * *Pliny* makes it a synonym to the *Uranoscopus*, a fish frequent in the *Italian* seas, but very different from our *Dragonet*, a name we have taken the liberty of forming,

NAME.

* *Lib. xxxii. c. 18.*

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from

from the diminutive *Draconculus*, a title given it by *Rondeletius*, and other authors. The *English* writers have called it the Yellow Gurnard, which having no one character of the *Gurnard* genus, we think ourselves obliged to drop that name.

PLACE.

It is found as far north as *Norway** and *Spitzbergen*, and as far south as the *Mediterranean* sea, and is not unfrequent on the *Scarborough* coasts, where it is taken by the hook in thirty or forty fathoms water. It is often found in the stomach of the Cod-fish.

DESCRIP.

This species grows to the length of ten or twelve inches: the body is slender, round, and smooth.

The head is large, and flat at the top; in the hind part are two orifices, thro' which it breathes, and also forces out the water it takes in at the mouth, in the same manner as the cetaceous fish.

The apertures to the gills are closed: on the end of the bones that cover them is a very singular trifurcated spine.

The eyes are large, and placed very near each other on the upper part of the head, so that they look upwards; for which reason it has been ranked among the *Uranoscopi*: the pupils are of a rich sappharine blue, the irides of a fine fiery carbuncle.

The upper jaw projects much farther than the lower: the mouth is very wide: the teeth are small.

The pectoral fins are round, and of a light-brown color; the ventral placed before them, are very broad, and consist of five branched rays.

* We have received it, with other curiosities, from that well-meaning prelate, *Erich Pontoppidan*, Bishop of *Bergen*. He was also Vice-Chancellor of the University of *Copenhagen*, in which station he died, *December* 20th. 1764, aged 66, much respected by his countrymen.

The

DRAGONET.



COMMON WEEVER.



CLASS IV. SORDID DRAGONET.

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The first dorsal fin is very singular, the first ray being setaceous, and so long as to extend almost to the tail: those of the second dorsal fins are of a moderate length, except the last, which is produced far beyond the others.

The anus is placed about the middle of the belly; the anal fin is broad, and the last ray the longest. *Pontoppidan* calls this species the flying fish: whether it makes use of any of its fins to raise itself out of the water, as he was informed they did, we cannot pretend to say.

The tail is rounded and long, and consists of ten rays.

The side line is straight: the colors are yellow, blue, and white, and make a beautiful appearance when the fish has been just taken. The blue is of an inexpressible splendor, the richest cerulean glowing with a gemmeous brilliancy. The throat is black. The membranes of all the fins extremely thin and delicate.

COLORS.

Dracunculus. Wil. Ictb. 136. Raii syn. Callionymus Dracunculus. C. dorsalis 70. SORDID.
pisc. 79. prioris radiis corpore brevioribus.
Cottus pinna secunda dorsi alba. Arted. Lin. syst. 434.
synon. 77.

THIS species we received from Mr. Travis. Its length was only six inches and an half.

The head was compressed; the forehead sloped down to the nose, being not so level as that of the preceding.

The eyes large, and almost contiguous.

The mouth small; the teeth very minute.

U 2

Over

SORDID DRAGONET. CLASS IV.

Over the gills was a strong trifurcated broad spine.

The first dorsal fin had four rays; the first, setaceous, extending a little higher than the others, the last very short: the two first rays and webs were yellow, the others black.

The second had ten soft rays, their ends extending beyond the webs, which were pellucid.

The pectoral fins consisted of twenty rays, and were ferruginous, spotted with a deeper cast of the same: the ventral fins consisted of five broad and much branched rays, like those of the first species.

The anal fin was white, and had ten rays; the tail had ten rays. In both species they are bifurcated at their ends, and the ray next the anal fin in both is very short.

In colors this is far inferior to the former, being of a dirty yellow, mixed with white and dusky spots; the belly is entirely white.

Lower

Lower jaw sloping down.
 Gill covers aculeated.
 Six branchiostegous rays.
 Two dorsal fins.
 Anus near the breast.

XVIII.
 WEEVER.

- Δρακων?* *Arist. Hist. an. Lib. VIII. c. 13.* *Ælian. Hist. an. Lib. II. c. 50.* *Oppian Halieut. II. 459.*
Draco marinus Plinii Lib. IX. c. 27.
Draco, Dracunculus. Lib. XXXII. c. 11. *Araneus. Lib. IX. c. 48.*
La vive. Belon. 209.
Draco. Rondel. 300. Gesner pisc. 77, 78.
Peter-manniken, Schwertfische. Schoneveldt 16.
The Weever. Wil. Ichth. 238. Raii syn. pisc. 91.
Trachinus maxilla inferiore longiore, cirris destituta. Arist. syn. 71.
Trachinus Draco. Lin. syst. 453. Gronov. Zooph. No. 274.
Farling, Fiassing. Faun. Suec. No. 305.
 71. COMMON.

THE qualities of this fish were well known to the antients, who take notice of them without any exaggeration: the wounds inflicted by its spines are exceedingly painful, attended with a violent burning, and most pungent shooting, and sometimes with an inflammation that will extend from the arm to the shoulder.*

It is a common notion that these symptoms proceed from something more than the small wound this fish is capable of inflicting; and that there is a venom infused into it, at least such as is made by the spines that form the first dorsal fin, which is dyed with black,

* It is probable that the malignity of the symptoms arises from the habit of body the person is in, or the part in which the wound is given.

and

and has a most suspicious aspect. The remedy used by a fisherman in our neighbourhood is the sea sand, with which he rubs the place affected for a considerable time.* At *Scarborough*, stale urine, warmed, is used with success.

This fish buries itself in the sands, leaving only its nose out, and if trod on immediately strikes with great force; and we have seen them direct their blows with as much judgment as fighting cocks. Notwithstanding this noxious property of the spines, it is exceeding good meat.

NAME.

The *English* name seems to have no meaning, being corrupted from the *French*, *la vive*, so called as being capable of living long out of the water, according to the interpretation of *Belon*.

DESCRIP.

It grows to the length of twelve inches, but is commonly found much less.

The irides are yellow: the under jaw is longer than the upper, and slopes very much towards the belly: the teeth are small.

The back is strait, the sides flat, the belly prominent, the lateral line strait: the covers of the gills are armed with a very strong sharp spine.

The first dorsal fin consists of five very strong sharp spines, which, as well as the intervening membranes are tinged with black; this fin, when quiescent, is lodged in a small hollow.

The second consists of several soft rays, commences just at the end of the first, and continues almost to the tail. The pectoral fins are pretty broad and angular; the ventral fins small.

The vent is placed remarkably forward, very near the throat:

* In the *Universal Museum* for November 1765, is an instance of a person who was reduced to great danger by a wound from this fish, and who was cured by the application of sweet oil, and taking *opium* and *venice treacle*.

the

GREATER WEAVER.



CLASS IV. GREAT WEEVER.

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the anal fin extends to a small distance from the tail, is a little hollowed in the middle, but not so much as to be called forked.

The sides are marked lengthways with two or three dirty yellow lines, and transversely by numbers of small ones: the belly is silvery.

Draco major seu araneus. Salvian. 70.

72. GREAT.

Greater Weever. *Tour Scotland, 1769, octavo.*

THE length eleven inches: greatest depth one and three quarters: head flat: eyes large: edges of the jaws rough with minute teeth: lower jaw the longest: head covered with minute tubercles: cheeks and gills with minute scales: on the gills is a sharp spine.

First dorsal fin black, with five spines: the second reaches almost to the tail: in the pectoral fins are thirteen branched rays: in the ventral, six: the anal extends opposite to the second dorsal fin: tail large, triangular, even at the end.

The scales run in oblique lines from the back to the belly, with a division between each row.

Inhabits the sea near *Scarborough*.

The fish mentioned by Mr. *Ray* under the following names is unknown to us.

Araneus minor, septentrionalibus Angliæ, an Otter Pike. Raii syn. pisc. 92.

Wil. Itb. 289.

Head

XIX.
COD FISH.

Head smooth.

Seven slender branchiostegous rays.

Body oblong; scales deciduous.

All the fins covered with a common skin.

Ventral fins slender, and ending in a point.

Teeth in the jaws; and in the palate, a series of minute teeth closely set together.

* With three dorsal fins; the chin bearded.

73. COMMON. La Morue. *Belon*, 121.
 Molva. *Rondel.* 280.
 Molva five morhua altera. *Gesner pisc.*
 88.
 Kablauw. *Schoneveldt*, 18.
 Afellus major vulgaris. *Wil. Ich.*
 165.

Cod-fish, or Keeling. *Raii syn. pisc.* 53.
 Gadus dorso tripterygio, ore cirrato,
 cauda æquali fere cum radio primo
 spinoso. *Arted. synon.* 35.
 Gadus morhua. *Lin. syst.* 436. *Gronow.*
Zooph. No. 319.
 Cabbia. *Fann. Suec.* No. 398.

THIS fish is found only in the northern part of the world; it is, as *Rondeletius* calls it, an ocean fish, and never met with in the *Mediterranean sea* *. It affects cold climates, and seems confined between the latitudes 66 and 50: what are caught north and south of those degrees being either few in quantity, or bad in

* None (says Captain *Armstrong* in his history of *Minorca*) of the *Afelli* or cod fish kind, frequent our shores. *p.* 163.

quality.

CLASS IV. COMMON COD FISH.

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quality. The *Greenland* fish are small and emaciated through want of food, being very voracious, and having in those seas a dearth of provision.

This locality of situation is common to many other species of this genus, most of them being inhabitants of the cold seas, or such that lie within zones that can just claim the title of temperate. There are nevertheless certain species found near the *Canary Islands*, called *Cberry**, of which we know no more than the name; but according to the unfortunate Captain *Glass*, are better tasted than the *Newfoundland* kind.

The great rendezvous of the cod fish is on the Banks of *Newfoundland*, and the other sand banks that lie off the coasts of *Cape Breton*, *Nova Scotia*, and *New England*. They prefer those situations, by reason of the quantity of worms produced in those sandy bottoms, which tempt them to resort there for food: but another cause of the particular attachment the fish have to these spots, is their vicinity to the polar seas, where they return to spawn; there they deposit their roes in full security, but want of food forces them, as soon as the first more southern seas are open, to repair thither for subsistence.

Few are taken north of *Iceland*, but on the south and west coasts they abound: they are again found to swarm on the coasts of *Norway*, in the *Baltic*, off the *Orkney* and the *Western Isles*; after which their numbers decrease, in proportion as they advance towards the south, when they seem quite to cease before they reach the mouth of the Straits of *Gibraltar*.

Before the discovery of *Newfoundland*, the greater fisheries of cod

* *Hist. Canary Islands*, 1798.

were on the seas of *Iceland*, and of our *Western Isles*, which were the grand resort of ships of all the commercial nations; but it seems that the greatest plenty was met with near *Iceland*. The *English* resorted thither before the year 1415: for we find that *Henry V.* was disposed to give the King of *Denmark* satisfaction for certain irregularities committed on those seas by his subjects. In the reign of *Edward* the IV. the *English* were excluded from the fishery by treaty; and forbidden to resort there under pain of forfeiture of life and goods. Notwithstanding this, our monarch afterwards gave licence to a ship of *Hull* to sail to *Iceland*, and there relade fish and other goods, without regard to any restrictions to the contrary. Our right in later times was far from being confirmed, for we find *Queen Elizabeth* condescending to ask permission to fish in those seas from *Christian* the IV. of *Denmark*, yet afterwards she so far repented her request, as to instruct her ambassadors to that court, to insist on the right of a free and universal fishery*. How far she succeeded, I do not know: but it appears, that in the reign of her successor, our countrymen had not fewer than a hundred and fifty ships employed in the *Iceland* fishery. I suppose this indulgence might arise from the marriage of *James* with a Princess of *Denmark*.

But the *Spanish*, the *French*, and the *Bretons*, had much the advantage of us in all fisheries at the beginning, as appears by the state of that in the seas of *Newfoundland* in the year 1578†, when the number of ships belonging to each nation stood thus:

* *Rymer's Fœd.* XVI. 275, 425.

† *Hackluyt's Coll. Voy.* III. 132.

Spaniards,

Spaniards, 100, besides 20 or 30 that came from *Biscaye*, to take whale for train, being about five or six thousand tons.

Portuguese, 50, or three thousand tons.

French and Bretons, 150, or seven thousand tons.

English, from 30 to 50.

But Mr *Anderson*, in his Dictionary of Commerce, I. 363, says, that the *French* began to fish there so early as 1536; and we think we have somewhere read, that their first pretence for fishing for cod in those seas, was only to supply an *English* convent with that article.

The encrease of shipping that resort to those fertile banks, are now unspeakable: our own country still enjoys the greatest share, which ought to be esteemed our chiefest treasure, as it brings wealth to individuals, and strength to the state.

All this immense fishery is carried on by the hook and line only*; the bait is herring, a small fish called a *Capelin*, a shell fish called *Clams*, and bits of sea fowl; and with these are caught fish sufficient to find employ for near fifteen thousand *British* seamen, and to afford subsistence to a much more numerous body of people at home, who are engaged in the various manufactures which so vast a fishery demands.

The food of the cod is either small fish, worms, testaceous, or crustaceous animals, such as crabs, large whelks, &c. and their digestion is so powerful, as to dissolve the greatest part of the shells

Food.

* We have been informed that they fish from the depth of fifteen to sixty fathoms, according to the inequality of the *Bank*, which is represented as a vast mountain, under water, above five hundred miles long, and near three hundred broad, and that seamen knew when they approach it by the great swell of the sea, and the thick mists that impend over it.

they swallow. They are very voracious, and catch at any small body they perceive moved by the water, even stones and pebbles, which are often found in their stomachs.

THE SOUNDS. Fishermen are well acquainted with the use of the air-bladder or *sound* of the cod, and are very dexterous in perforating this part of a live fish with a needle, in order to disengage the inclosed air; for without this operation it could not be kept under water in the well-boats, and brought fresh to market. The *sounds* of the cod

ISINGLASS. salted is a delicacy often brought from *Newfoundland*. *Isinglass* is also made of this part by the *Iceland* fishermen: as the process may be of service to instruct the natives of the North of *Scotland* where these fish are plentiful, I beg leave to give it in the Appendix, extracted from a useful paper on the subject, in the *Pb. Tr.* of 1773, by *Humphrey Jackson, Esq.*

**VASTLY
PROLIFIC.**

Providence hath kindly ordained, that this fish, so useful to mankind, should be so very prolific as to supply more than the deficiencies of the multitudes annually taken. *Leewenboek* counted nine millions three hundred and eighty-four thousand eggs in a cod fish of a middling size, a number sure that will baffle all the efforts of man, or the voracity of the inhabitants of the ocean to exterminate, and which will secure to all ages an inexhaustible supply of grateful provision.

In our seas they begin to spawn in *January*, and depolite their eggs in rough ground, among rocks. Some continue in roe till the beginning of *April*. The cod fish in general recover quicker after spawning than any other fish, therefore it is common to take some good ones all the summer. When they are out of season they are thin tailed and lousy, and the lice chiefly fix themselves on the inside of their mouths.

The

The fish of a middling size are most esteemed for the table, and are chosen by their plumpness and roundness, especially near the tail, by the depth of the fulcus or pit behind the head, and by the regular undulated appearance of the sides, as if they were ribbed: The glutinous parts about the head lose their delicate flavor after it has been twenty-four hours out of the water, even in winter, in which these and other fish of this genus are in highest season.

The largest that we ever heard of taken on our coasts, weighed seventy-eight pounds, the length was five feet eight inches; and the girth round the shoulders five feet. It was taken at *Scarborough* in 1755, and was sold for one shilling. But the general weight of these fish in the *Yorkshire* seas, is from fourteen to forty pounds.

This species is short in proportion to its bulk, the belly being very large and prominent.

The jaws are of an equal length, at the end of the lower is a small beard; the teeth are disposed in the palate as well as jaws.

The eyes are large.

On the back are three soft fins; the first has fourteen, the two last nineteen rays a-piece. The ventral fins are very slender, and consist but of six rays; the two first extending far beyond the other. It has two anal fins; the first consisting of twenty, the last of sixteen rays.

The tail is almost even at the end: the first ray on each side is short, and composed of a strong bone.

The color of this fish is cinereous on the back and sides, and commonly spotted with yellow: the belly is white, but they vary much, not only in color* but in shape, particularly that of the head.

* Codlings are often taken of a yellow, orange, and even red color, while they remain among the rocks, but on changing their place assume the color of other cod fish.

The

SIZE.

DESCRIP.

SIDE LINE. The side line is white and broad, strait, till it reaches opposite the vent, when it bends towards the tail.

74. **HADOCK.** Aigrefin, ou aiglefin. *Belon*. 118. *pisc.* 55.
 Tertia asellorum species. *Rondel.* 277. *Gadus dorso tripterygio, ore cirrato,*
 Tertia asel. Sp. Eglefinub. *Gesner pisc.* max. sup. longiore, corpore albicante,
 86. cauda parum bifurca. *Arted. synon.* 36.
 Onos five asinus veterum. *Turner* *Gadus Eglefinus. G. tripterygius cir-*
epist. ad. Gesner. ratus albicans, cauda biloba. *Lin.*
Asellus minor, Schelfisch. Schonevelds. *Syst.* 435.
 18. *Kolja. Faun. Suec. No. 306.*
Hadock. *Wil. Ictb.* 170. *Raii syn. Gronov. Zooph. No. 321.*

N A M E.

OUR countryman *Turner* conjectured this species to have been the *Or*, or *Asinus*, of the antients, and *Belon* that it was the *Κριός*, and the *Πρόκατος* of *Oppian*. We have carefully consulted most of the antient naturalists, but cannot discover any marks by which we can determine the species they intended. The words* *Or*, † *Asinus*, *Asellus*, ‡ *Callarias*, and *Bacchus*, are familiarly applied to several of our species of cod fish by the more modern writers; yet the antients from whom they are borrowed, have not authorized the application to any particular kind, either by description or any other method.

Different reasons have been assigned for giving the name of *Or*, or *Asinus* to this genus, some imagining it to be from the color of the fish, others because it used to be carried on the backs of asses

* *Arist. Hist. an. Lib. VIII. c. 15. Oppian Halieut. I. 151. III. 191.*

† *Ovidii Halieut. Lin. 131. Plinii Lib. IX. c. 16. 17. ‡ Lib. c. 17.*

to

to market; but we shall drop this uncertain subject, and proceed to what we have fuller assurance of.

Large hadocks begin to be in roe the middle of *November*, and continue so till the end of *January*; from that time till *May* they are very thin tailed, and much out of season. In *May* they begin to recover, and some of the middling-sized fish are then very good, and continue improving till the time of their greatest perfection. The small ones are extremely good from *May* till *February*, and some even in *February*, *March*, and *April*, viz. those which are not old enough to breed.

SEASON.

The fishermen assert, that in rough weather hadocks sink down into the sand and ooze in the bottom of the sea, and shelter themselves there till the storm is over, because in stormy weather they take none, and those that are taken immediately after a storm are covered with mud on their backs.

In summer they live on young herrings and other small fish; in winter on the stone-coated worms*, which the fishermen call *hadock meat*.

FOOD.

The grand shoal of hadocks comes periodically on the *Yorkshire* coasts. It is remarkable that they appeared in 1766 on the 10th of *December*, and exactly on the same day in 1767: these shoals extended from the shore near three miles in breadth, and in length from *Flamborough* head to *Tinmouth* castle, and perhaps much farther northwards. An idea may be given of their numbers by the following fact: three fishermen, within the distance of a mile from *Scarborough* harbour, frequently loaded their *coble* or boat with them twice a-day, taking each time about a ton of fish: when they put

VAST
SHOALS.

* A species of *Serpula*.

down

down their lines beyond the distance of three miles from the shore, they caught nothing but dog fish, which shows how exactly these fish keep their limits.

The best hadocks were sold from eightpence to a shilling per score, and the poor had the smaller sort at a penny, and sometimes a halfpenny per score*.

The large hadocks quit the coast as soon as they go out of season; and leave behind great plenty of small ones. It is said that the large ones visit the coasts of *Hamburg* and *Jutland* in the summer.

It is no less remarkable than providential, that all kinds of fish (except mackrel) which frequent the *Yorkshire* coast, approach the shore, and as if it were offer themselves to us, generally remaining there as long as they are in high season, and retire from us when they become unfit for use.

It is the commonest species in the *London* markets.

DESCRIP.

They do not grow to a great bulk, one of fourteen pounds being of an uncommon size, but those are extremely coarse, the best for the table weighing from two to three pounds.

The body is long, and rather more slender than those of the preceding kinds: the head slopes down to the nose: the space between the hind part of the first dorsal fin is ridged: on the chin is a short beard.

On the back are three fins resembling those of the common cod-

* Here Mr. *Travis*, to whom I am much obliged for a most accurate account of the *Yorkshire* fish, with great humanity projects an inland navigation, to convey at a cheap and easy method, those gifts of Providence to the thousands of poor-manufacturers who inhabit the distant parts of that vast county.

fish :

CLASS IV. WHITING POUT.

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fish : on each side beyond the gills is a large black spot. Superstition assigns this mark to the impression St. Peter left with his finger and thumb when he took the tribute out of the mouth of a fish of this species, which has been continued to the whole race of hadocks ever since that miracle.

The lateral line is black : the tail is forked.

The color of the upper part of this species is dusky or brown ; the belly and lower part of the sides silvery.

Irides silvery : pupil large and black.

Afellus mollis latus. Mr. Lister apud *Wil. Ictb. App.* 22.

Whiting Pout, *Londonensibus.* Raii *syn. pisc.* 55.

Gadus dorso tripterygio, ore cirrato, longitudine ad latitudinem tripla, pinna ani prima officulorum triginta.

Arted. synon. 37.

Gadus barbatus. G. tripterygius cirratus maxilla inferiore punctis utrinque septem. *Lin. syst.* 437. *Gronow. Zooph.* No. 320.

Sma-Torfk. Faun. Succ. No. 311.

75. POUT.

THIS species never grows to a large size, seldom exceeding a foot in length.

It is distinguished from all others by its great depth ; one of the size abovementioned being near four inches deep in the broadest part.

The back is very much arched, and carinated. The scales larger than those of the cod fish. The mouth small ; the beard short. On each side of the lower jaw are seven or eight punctures.

The first dorsal fin is triangular, and terminates in a long fibre : the color of the fins and tail black : at the bottom of the pectoral fins is a black spot.

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Y

The

The lateral line is white, broad, and crooked.

The tail is even at the end, and of a dusky color.

The color of the body is white, but more obscure on the back than the belly, and tinged with yellow.

It is called at *Scarborough* a *Kleg*. It is a very delicate fish.

76. B13.

Afellus nanus, Dwergdorſch, Krum-
ſtert? *Schoneveldt*, 20.

Bib & Blinds *Cornubiensibus*. *Wil. Ich.*

169:

Afellus luscus. *Raii ſyn. piſc.* 54.

Gadus dorſo tripterygio, ore cirrato,
officulo pinnarum ventralium primo
in longam ſetam producto. *Arted.*

ſynn. 35.

Gadus luscus. *Lin. ſyſt.* 437.

THIS species grows to the length of one foot. The greatest depth three inches and a half. The scales are large, and so far from adhering to the skin, as is asserted by naturalists, are extremely deciduous.

The body is deep, the sides compressed. The eyes covered with a loose membrane, which it can blow up at pleasure, like a bladder. The mouth is small: beneath the chin a beard, an inch long.

In the first dorsal fin twelve rays: in the second, which is longest, twenty-three: in the third, twenty. The pectoral fins about sixteen: the ventral six or seven, of which the first ray is long, and setaceous: the first anal fin has twenty-seven; the last twenty-one rays.

COLOR.

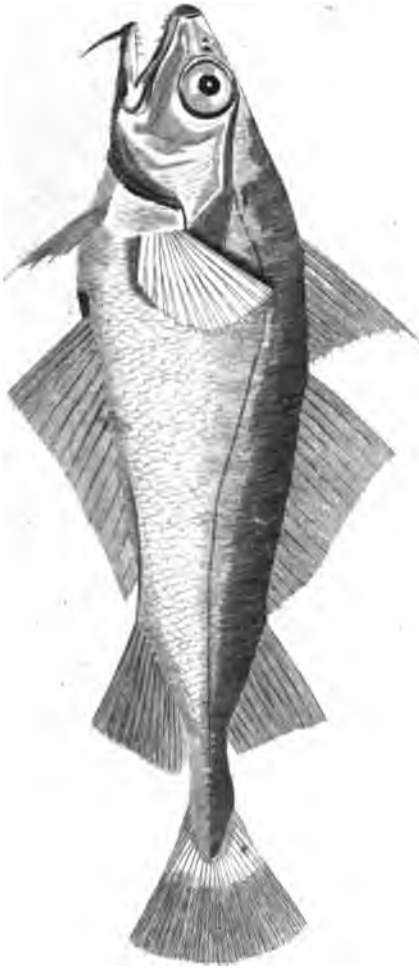
The back is of a light olive: the sides finely tinged with gold: the belly white: the anal fins dusky, edged with pure white; the tail with black.

Le

Pl. XXX.

POOR.

Pl. 77.



G. Wilkinson del.

BIB.

J. Magell sculp.
1876.

Le Merlan ? *Belon*, 120.

Anthiz secunda species. Rondel. 191.

Gesner pisc. 56.

Asellus mollis minor, seu asellus omnium minimus. Mollo Venetiis.

Capelan Massiliæ. Wil. Ich. 171.

Poor or Power *Cornub. Mr. Jago. Raii syn. pisc.* 163. fig. 6.

Gadus dorso tripterygio, ore cirrato, corpore fescunciali, ano in medio corporis. Arted. synon. 36.

Gadus minutus. Lin. syst. 438.

77. POOR.

THIS is the only species of cod fish with three dorsal fins that we (at this time) are assured is found in the *Mediterranean* sea. It is taken near *Marseilles*, and sometimes in such quantities as to become a nuisance; for no other kinds of fish are taken during their season*. It is esteemed good, but incapable of being salted or dried: *Belon* says, that when it is dried in the sun, it grows as hard as horn; *C'est dela que les Anglois l'ont nommé Bouclzs born.*

It is the smallest species yet discovered, being little more than six inches long. DESCRIP.

On the chin is a small beard: the eyes are covered with a loose membrane: on the gill-covers, and the jaws are on each side, nine punctures.

The first dorsal fin has twelve rays; the second nineteen; the third seventeen.

The pectoral fins thirteen; the ventral fins six: the first anal fin twenty-seven; the second seventeen.

The color on the back is a light brown; on the belly a dirty white.

We owe the discovery of this kind in our seas to the Rev. Mr. *Jago*.

* *Rondel.* 191.

Y 2

We

** Three dorsal fins : chin beardless.

78. COAL. Colfish. *Belon*, 128. *pisc.* 168. *Raii syn. pisc.* 54.
 Colfish *Anglorum*. *Gesner pisc.* 89. *Gadus dorso tripterygio*, ore imberbi,
Asellus niger. Kolfish. Koler. *Schone-* maxilla inferiore longiore et linea
walde, 19. *lateralis recta. Arud. synon.* 34.
 Cole fish *Septentrionalium anglorum*. *Gadus carbonarius. Lin. syst.* 438.
 Rawlin Pollack *Cornubiensium. Wilk. Gronov. Zooph.* No. 317.

THE coal fish takes its name from the black color that it sometimes assumes. *Belon* calls it the *Colfish*, imagining it was so named by the *English*, from its producing the *Ichthyocolla*, but *Gesner* gives the true etymology.

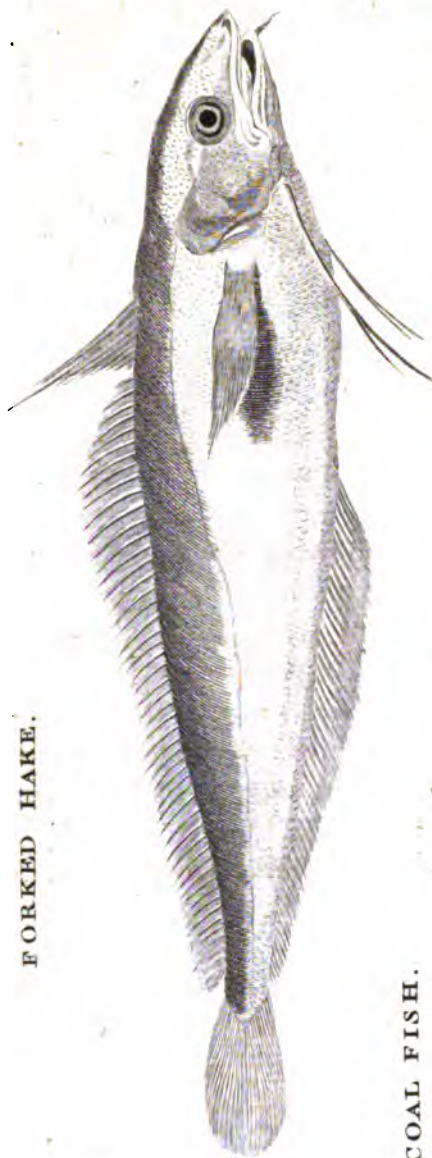
These fish are common on most of our rocky and deep coasts, but particularly those of the north of *Great Britain*. They swarm about the *Orkneys*, where the fry are the great support of the poor.

YOUNG. The young begin to appear on the *Yorkshire* coast the beginning of *July* in vast shoals, and are at that time about an inch and an half long. In *August* they are from three to five inches in length, and are taken in great numbers with the angling rod, and are then esteemed a very delicate fish, but grow so coarse when they are a year old that few people will eat them. Fish of that age are from eight to fifteen inches long, and begin to have a little blackness near the gills, and on the back, and the blackness increases as they grow older.

The

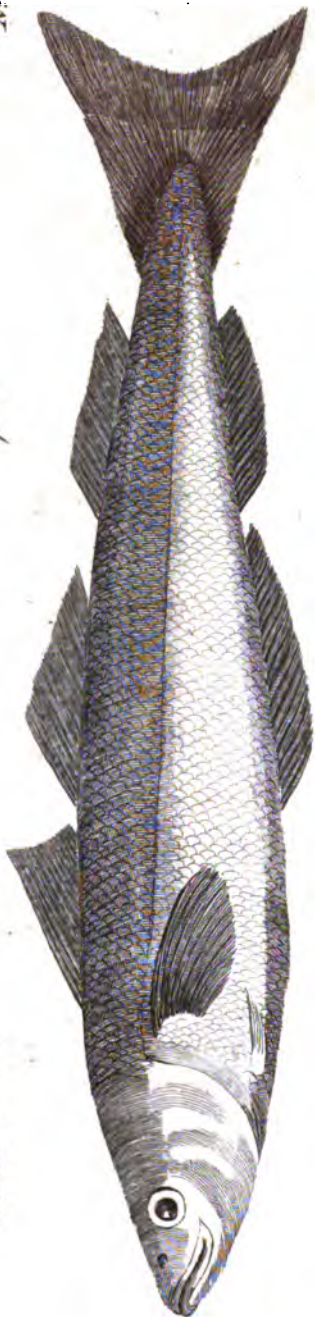
XXXI.

FORKED HAKE.



N^o 84.

COAL FISH.



N^o 78.

The fry is known by different names in different places: they are called at *Scarborough Parrs*, and when a year old, *Billets*. About nine or ten years ago such a glut of *Parrs* visited that part, that for several weeks it was impossible to dip a pail into the sea without taking some.

Tho' this fish is so little esteemed when fresh, yet it is salted and dried for sale; a person last year having cured above a thousand at *Scarborough*.

The coal fish is of more elegant form than the cod fish: they generally grow to the length of two feet and an half, and weigh about twenty-eight or thirty pounds at most. The head is small; the under jaw a little longer than the upper: the irides silvery, marked on one side with a black spot. DESCRIP.

It has three dorsal fins, the first consists of fourteen, the next of twenty, the last of twenty-two rays.

The pectoral fins of eighteen; the ventral of six: the first anal fin of twenty-two, the second of nineteen.

The tail is broad and forked.

These fish vary in color. We have seen some whose back, nose, dorsal fins and tail were of a deep black: the gill covers silver and black: the ventral and anal fins white; the belly of the same color.

We have seen others dusky, others brown, but in all the lateral line was strait and white, and the lower part of the ventral and anal fins white.

Afellus

79. POLLACK. *Afellus virefcens*, Schwartzes Kolmulen. *Schoneveldt*, 20.
Afellus flavescens; Gelbe Kolmulen. *Ibid.*
Afellus Huitingo-Pollachius. *Wil. Ictb.* 167.
 Whiting Pollack. *Raii syn. pifc.* 53.
- Gadus dorfo tripterygio*, ore imberbi, max. inf. longiore, linea laterali curva. *Arted. fyon.* 35.
Gadus Pollachius. *Lin. fyft.* 439.
Gronov. Zooph. No. 318.
Norwegis Scy. Babufius Grafik? Faun. Suec. No. 309.

THIS species is common on many of our rocky coasts: during summer they are seen in great shoals frolicking on the surface of the water, and flinging themselves into a thousand forms. They are at that time so wanton as to bite at any thing that appears on the top of the waves, and are often taken with a goose's feather fixed to the hook. They are a very strong fish, being observed to keep their station at the feet of the rocks in the most turbulent and rapid sea.

They are a good eating fish: they do not grow to a very large size; at least the biggest we have seen did not exceed six or seven pounds: but we have heard of some that were taken in the sea near *Scarborough*, which they frequent during winter, that weighed near twenty-eight pounds. They are there called *Leets*.

The under jaw is longer than the upper; the head and body rises pretty high, as far as the first dorsal fin.

The side line is incurvated, rising towards the middle of the back, then sinking and running strait to the tail; it is broad, and of a brown color.

the

The first dorsal fin has eleven rays, the middle nineteen, the last sixteen: the tail is a little forked.

The color of the back is dusky, of some inclining to green: the sides beneath the lateral line marked with lines of yellow; the belly white.

Secunda afellorum species. *Rondel.* 276.

Merlanus. *Rondel. Gesner pisc.* 85.

Afellus candidus primus, Witling.

Schoneveldt, 17.

Afellus mollis major, seu albus. *Wil.*

Ibb. 170.

Whiting. *Raii syn. pisc.* 55.

Gadus dorso tripterygio, ore imberbi corpore albo, maxilla superiore longiore. *Arceid. synon.* 34.

Gadus merlangus. *Lin. syst.* 438. *Gronov. Zooph.* No. 316.

Hwitting, Widding. *Faun. Suec.* No. 310.

80. WHITING.

WHITINGS appear in vast shoals in our seas in the spring, keeping at the distance of about half a mile to that of three from the shore. They are caught in vast numbers by the line, and afford excellent diversion.

They are the most delicate, as well as the most wholesome of any of the genus, but do not grow to a large size; the biggest we ever saw* not exceeding twenty inches, but that is very uncommon, the usual length being ten or twelve.

It is a fish of an elegant make: the upper jaw is the longest, the eyes large, the nose sharp, the teeth of the upper jaw long, and appear above the lower when closed.

* We have been informed that whittings, from four to eight pounds in weight, have been taken in the deep water at the edge of the *Dogger-Bank*.

The

The first dorsal fin has fifteen rays, the second eighteen, the last twenty.

The color of the head and back is a pale brown; the lateral line white, and is crooked; the belly and sides silvery; the last streaked lengthways with yellow.

* * With only two dorsal fins.

81. HAKE. Le Merluz. *Belon*, 115. Gadus dorso dipterygio, maxilla inferiore longiore. *Arsed. synon.* 36.
 Afellus, ὄνος, ὀνονος. *Rondel.* 272. Merlucius. *Gesner pisc.* 84. Gadus Merlucius. *Lin. syst.* 439.
 Afellus primus five Merlucius. *Wil. Faun. Suec.* No. 314. *Gronov. Zoonb.* No. 315.
Ictb. 174.
 The Hake. *Raii syn. pisc.*

A FISH that is found in vast abundance on many of our coasts, and of those of *Ireland*. There was formerly a vast stationary fishery of *Hake* on the *Nymph Bank* off the coast of *Waterford*, immense quantities appearing there twice a year; the first shoal coming in *June*, during the *Mackrel* season, the other in *September*, at the beginning of the *Herring* season, probably in pursuit of those fish: it was no unusual thing for six men with hooks and lines to take a thousand *Hake* in one night, besides a considerable quantity of other fish. These were salted and sent to *Spain*, particularly to *Bilboa*. * We are at this time uninformed of the state of this

* *Smith's Hist. Waterford*, 261.

fishery,

fishery, but find that Mr. *Smith*, who wrote the history of the county of *Waterford*, complains even in his time (1746) of its decline. Many of the gregarious fish are subject to change their situations, and desert their haunts for numbers of years, and then return again. We see, p. 90, how unsettled the *Basking Shark* appears to be: Mr. *Smith* instances the loss of the *Haddock* on the *Waterford* shores, where they used to swarm; and to our knowledge we can bring the capriciousness of the herrings, which so frequently quit their stations, as another example.

Sometimes the irregular migration of fish is owing to their being followed and harassed by an unusual number of fish of prey, such as the shark kind.

Sometimes to deficiency of the smaller fish, which served them as food.

And lastly, in many places to the custom of trawling, which not only demolishes a quantity of their spawn, which is deposited in the sand, but also destroys or drives into deeper waters numberless worms and insects, the repast of many fish.

The hake is in *England* esteemed a very coarse fish, and is seldom admitted to table either fresh or salted*.

These fish are from a foot and an half to near twice that length: they are of a slender make, of a pale ash color on their backs, and of a dirty white on their bellies.

Their head is flat and broad; the mouth very wide; the teeth very long and sharp, particularly those of the lower jaw.

The first dorsal fin is small, consisting of nine rays; the second reaches from the base of the former almost to the tail, and is com-

DESCRIP.

* When cured it is known by the name of *Peor John*.

posed of forty rays, of which the last are the highest: the pectoral fins have about twelve, the ventral seven: the anal thirty-nine.

The tail is almost even at the end.

82. FORKED. *Galce, claria marina. Belon, 126. Raii syn. pisc. 75.*
Phycis. Rondel. 186. Gesner pisc. 718. Phycis. Artd. synon. App. III.
Tinca marina. Aldr. Wil. Ich. 205. Blennius Phycis. Lin. syst. 442.

THIS is the fish to which *Rondeletius* gives the name of *Phycis*, borrowing it from *Aristotle* and *Pliny*, who have not so sufficiently characterized it, as to enable us to judge what species they intended. It is found in the *Mediterranean* more frequently than in our seas, and we believe is the fish mentioned by Mr. *Armstrong*, and Doctor *Clegborn**, in their histories of *Minorca*, under the name of *Molio*, *Mollera*, and *Molle*.. It is known on the coast of *Cornwall* by the name of the great forked beard†, where it was first discovered by Mr. *Jago*. We place it in this genus, as it has more the appearance of the cod fish kind, the hake especially, than of the *Blenny*, into which genus *Linnaeus* has flung it; we therefore have given this species the name of the *Forked Hake*.

The length of one that was taken on the *Flintshire* shores was eleven inches and an half, its greatest depth three inches; but according to Doctor *Borlase*, some grow to be above eighteen inches long.

* *Armstrong*, 161. *Clegborn*, 43.

† *Barbus major Cornubiensis cirris bifurcatis*: the great forked beard. Mr. *Jago. Raii syn. pisc. 163. fig. 7.*

The

The head sloped down to the nose in the same easy manner with others of this genus: the mouth large: besides the teeth in the jaws was a triangular congeries of small teeth in the roof of the mouth.

At the end of the lower jaw was a small beard. The first dorsal fin was triangular; the first ray extended far beyond the rest, and was very slender: the second fin began just behind the first, and extended almost to the tail: the ventral fins were three inches long, and consisted of only two rays, joined at the bottom, and separated or bifurcated towards the end: the vent was in the middle of the body: the anal fin extended from thence just to the tail: the lateral line was incurvated: the tail was rounded.

The color was a cinereous brown.

Barbus minor Cornubiensis cirris bifurcis. The Lesser Forked Beard. Mr. Jago. *Raii syn. pisc.* 164. fig. 8.

83. LEST.

WE never saw this species, and having but very imperfect descriptions of it, cannot with any certainty pronounce it to be of this genus, but are unwilling to separate them, as we found them united by that judicious Ichthyologist Mr. Jago.

It is said not to exceed five inches in length: the first dorsal fin (in the print) is shorter than that of the preceding; the second resembles that of the other kind: the ventral fins bifurcated. It has a small beard, and a rounded tail, but the head is shorter and more steep; the color black, the skin smooth, and the appearance disagreeable.

84. TRIFUR-
CATED.

THIS new species was communicated to me by the Reverend Mr. *Hugh Davies* of *Beaumaris*, and was taken near that place.

Its length was twelve inches : the color a deep brown ; excepting the folding of the lips, which were snow white, giving it a strange appearance.

The head depressed and very broad : eyes large : irides yellowish : mouth very wide, with irregular rows of incurvated teeth. In the roof of the mouth a semilunar congeries of teeth. No tongue.

From the setting on of the pectoral fins the body was compressed, but remarkably so, as it approached the tail, growing very slender near that part. On the beginning of the back was a *fulcus*, in which was the rudiment of a first dorsal fin ; the second reached almost to the tail, and the anal corresponded. Above the pectoral fins, on each side, was a row of tubercles from which commenced the lateral line, which was (midway) incurvated. The ventral fins were trifurcated : the tail rounded.

In a prone situation this fish made a strange appearance, so is represented in that as well as another attitude.

Ling,



TRIFURCATED HAKE.



Ling, Lingfische. *Belon*, 130. *Gesner* *Gadus dorso dipterygio, ore serrato.* 85. LING.
pisc. 95. *maxilla superiore longiore.* *Arted.*
Molva major Charleton ex. pisc. 3. *synon.* 36.
Afellus longus, eine Lenge. *Schons-* *Gadus molva.* *Lin. syst.* 439.
walde, 18. *Langa. Faun. Suec.* No. 313.
Ling. Wil. Ksch. 175. *Raii syn. pisc.* 56.

THE ling takes its name from its length, being corrupted from the word *long*. It abounds about the *Scilly Isles*, on the coasts of *Scarborough*, and those of *Scotland* and *Ireland*, and forms a considerable article of commerce*.

In the *Yorkshire* seas they are in perfection from the beginning of *February* to the beginning of *May*, and some till the end of that month. In *June* they spawn, depositing their eggs in the soft oozy ground of the mouth of the *Tees*: at that time the males separate from the females, and resort to some rocky ground near *Flamborough Head*, where the fishermen take great numbers without ever finding any of the female or roed fish among them.

While a ling is in season its liver is very white, and abounds with a fine flavored oil; but as soon as the fish goes out of season, the liver becomes red as that of a bullock, and affords no oil. The same happens to the cod and other fish in a certain degree, but not so remarkably as in the ling. When the fish is in perfection, a very large quantity of oil may be melted out of the liver by a slow

OIL.

* This branch of trade was considerable so long ago as the reign of *Edward III.* an act for regulating the price of *Lob*, *Ling*, and *Cod*, being made in his 31st year.

fire,

fire, but if a violent sudden heat be used for that purpose, they yield very little. This oil, which nature hoards up in the cellular membranes of fishes, returns into their blood, and supports them in the engendering season, when they pursue the business of generation with so much eagerness as to neglect their food.

Vast quantities of ling are salted for exportation, as well as for home consumption. When it is cut or split for curing, it must measure twenty-six inches or upwards from the shoulder to the tail; if less than that it is not reckoned a sizeable fish, and consequently not entitled to the bounty on exportation; such are called *Drizzles*, and are in season all summer.

DESCRIP. The usual size of a ling is from three to four feet; but we have heard of one that was seven feet long.

The body is very slender; the head flat; the upper jaw the longest; the teeth in that jaw small and very numerous; in the lower, few, slender, and sharp: on the chin is a small beard.

The first dorsal fin is small, placed near the head, and consists of fifteen rays: the second is very long, reaching almost to the tail, and consists of sixty-five rays: the pectoral fins have fifteen radiated rays; the ventral fins six; the anal sixty-two: the tail is rounded at the end.

COLOR. These fish vary in color, some being of an olive hue on the sides and back, others cinereous; the belly white. The ventral fins white: the dorsal and anal edged with white. The tail marked near the end with a transverse black bar, and tipped with white.

Strinfias,

Strinfias, ou Botatriffa. *Belon*, 300.

Lota. *Rondel. fluviat.* 165. *Gesner pisc.* 599.

Quappen, Elf-quappen, Tider-quappen, Trufchen? *Schoneveldt*, 49.

Burbot, or Bird-bolt. *Plot Staff.* 241.

Tab. 22. fig. 4.

Mustela fluviatilis nostratibus Eel-pout.

Wil. Ictb. 125. *Raii syn. pisc.* 67.

Aal-rutte, Rutte. *Kram.* 388.

Gadus dorso dipterygio, ore cirrato, maxillis æqualibus. *Arted. synon.* 38.

Gadus Lota. *Lin. Syst.* 440. *Grossow.*

Zooph. No. 97.

Lake. Faun. Suec. No. 113.

26. BURBOT.

THIS fish is found in the *Trent*, but in greater plenty in the river *Witham*, and in the great *East Fen* in *Lincolnshire*. It is a very delicate fish for the table, though of a disgusting appearance when alive. It is very voracious, and preys on the fry and lesser fish. It does not often take a bait, but is generally caught in weels.

PLACE.

It abounds in the lake of *Geneva*, where it is called *Lota*, and it is also met with in the *Lago Maggiore*, and *Lugano*.

The largest that we ever heard was taken in our waters weighed between two and three pounds, but abroad they are sometimes found of double that weight.

DESCRIP.

Their body has some resemblance to that of an eel, only shorter and thicker, and its motions also resemble those of that fish: they are besides very smooth, slippery, and slimy.

The head is very ugly, being flat, and shaped like that of a toad: the teeth are very small, but numerous: the irides yellow.

On the end of the nose are two small beards; on the chin another: the number of its branchiostegous rays are seven.

The

THREE BEARDED COD. CLASS IV.

The first dorsal fin is short: the second is placed immediately behind it, and extends almost to the tail: the pectoral fins are rounded: the ventral fins consist of six rays, of which the two first are divided near their ends from each other: the vent is placed in the middle of the belly, and the anal fin reaches almost to the tail: the tail is rounded at the end.

COLOR.

The color of this species varies; some are dusky, others of a dirty green, spotted with black, and oftentimes with yellow, and the belly in some is white; but the real colors are frequently concealed by the slime.

87. THREE
BEARDED.

Mustella vulgaris. *Rendel.* 281. *Ges-*
ner pisc. 89.
Sea Loche Cestria, Whistle fish *Cornu-*
bia. *Wil. Ichth.* 121. *Raii syn.*

pisc. 67.
Rockling, Mr. Yago. Raii syn. pisc.
164. *fig.* 9.

THIS species commonly frequents the rocky shores of these islands, and is sometimes taken with a bait.

It grows to the length of nineteen inches; the weight two pounds two ounces: the head is large and flat: the eyes not remote from the end of the nose: the body is long, slender, and compressed sideways, especially towards the tail: at the end of the upper jaw are two beards; on the chin one.

The teeth are numerous and small, disposed along the jaws in form of a broad plate: in the roof of the mouth is a set of small teeth, disposed in a triangular form.

The number of branchiostegous rays is seven.

The

FIVE BEARDED COD.

N^o 86.



THREE BEARDED COD.

N^o 87.

CLASS IV. FIVE BEARDED COD.

177

The first dorsal fin is lodged in a deep furrow just beyond the head, and consists of a number of short unconnected rays: the second rises just behind it, and reaches very near the tail: the pectoral fins are broad and round: the ventral fins small; the second ray the longest: the anal fin reaches almost to the tail: the tail rounded at the end.

The scales are very small: the color of the body and head a reddish yellow, marked above the lateral line with large black spots: the back fin and tail are darker; the vent fin of a brighter red, but all are spotted. The lateral line bends in the middle, then passes straight to the tail.

Gadus dorso dipterygio, sulco magno ad pinnam dorsi primam, ore cirrato?
Arted. Synon. 37.

Gadus mustela. G. dipterygius cirria 5, pinna dorsali priore exoleta. Lin. Syst. 440. Gronov. Zooph. No. 314.

88. FIVE BEARDED.

MR. *Willughby* makes this species with five beards, a variety only of the former; but having opportunity of examining several specimens, we must dissent from his opinion, having always observed the number of the beards in the spotted kind not to exceed three, nor the number in the brown kind to be less than five. The first ray of the dorsal fin is very long. There is also some difference in the form as well as color, this species being rather thicker in proportion than the former.

Excepting these particulars, and the number of beards, there is a general agreement in the parts of both. The beards on the up-

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per jaw are four, viz. two at the very end of the nose, and two a little above them : on the end of the lower jaw is a single one.

These fish are of a deep olive brown, their belly whitish. They grow to the same size as the former.

The *Cornish* fishermen are said to whistle, and make use of the words *Bod, Bod, vean*, when they are desirous of taking this fish, as if by that they facilitated the capture. In the same manner the *Sicilian* fishermen repeat their *Mamassu di pajanu*, &c. when they are in pursuit of the *Sword Fish* *.

..* With only one dorsal fin.

§9. TORSK.

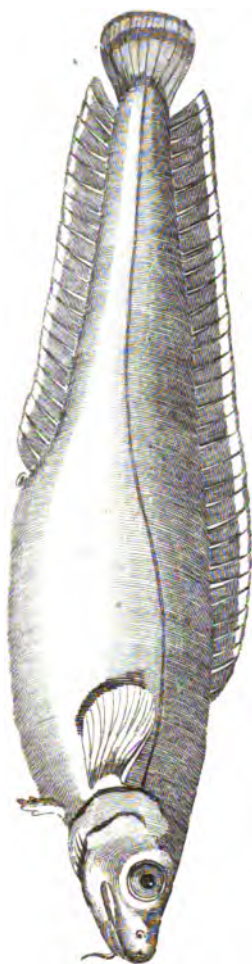
THIS fish has been hitherto supposed to be of the section of this genus, which has three dorsal fins. The species known in *Sweden* by that name is included in that division ; and as such I described it in the former edition from the account *Linneus* has given us. But from the information of the Rev. Mr. *Low*, minister of *Birsa, Orkney*, who in 1774, made (at my request) the voyage of the *Sbetland* islands, I find the *British Torsk* to be totally different ; and will occasion the addition of a fourth division in this genus.

The *Torsk* is described and engraven in Mr. *Strom's* history of *Sondmoer*, under the same name. † The figure agrees with that Mr. *Low* favoured me with.

* *Vide p. 142.*

† *Eller Torsk*, p. 272. tab. I. fig. 19. and when dried. *Klip-fish*.

The



TORSK.

The *Torsk*, or as it is called in the *Shetlands*, *Tusk* and *Brismak* is a northern fish; and as yet undiscovered lower than about the *Orknies*, and even there it is rather scarce. In the seas about *Shetland*, it swarms, and forms (barrelled or dried) a considerable article of commerce.

The length of the specimen, Mr. *Low* described for me, was twenty inches, the greatest depth four and a half.

The head small, the upper jaw a little longer than the lower: both jaws furnished with multitudes of small teeth: on the chin was a small single beard: from the head to the dorsal fin was a deep furrow. The dorsal fin began within six inches from the tip of the nose, and extended almost to the tail.

The pectoral fins small, and rounded; the ventral short, thick and fleshy, ending in four *cirrhi*.

The belly from the throat grows very prominent: the anal fin was long, and reached almost close to the tail, which is small and circular. The number of rays could not be counted with accuracy by reason of their softness, and the thickness of the skin: the side line scarcely discernible.

The color of the head dusky: the back and sides yellow: belly white: edges of the dorsal, anal, and caudal fins white: the other parts dusky: the pectoral fins brown.

I flatter myself, that in a small time, the public will receive from Mr. *Low*, a fuller account of this important fish, in a comprehensive history of the islands of *Orkney*, and *Shetland*.

XX.
BLENNY*.

Head blunt at the end, and very steep.

Body smooth and slippery.

Teeth slender.

Body compressed sideways.

Ventral fins consisting generally of only two united rays.

One dorsal fin.

Six branchiostegous rays.

* With a crested head.

90. CRESTED. Adonis, ou exocetus. *Belon*, 219. *Ictb.* 134. *Raii syn. pisc.* 73.
 Galerita. *Rondel.* 204. *Gefner pisc.* Blennius cristatus capitis transversa cutacea.
 14, 17, 18. *Arted. synon.* 44.
 Alauda cristata, five Galerita. *Wil.* Blennius Galerita. *Lin. syst.* 441.

THIS species is found, though not frequently, on our rocky shores, and is commonly about four or five inches long.

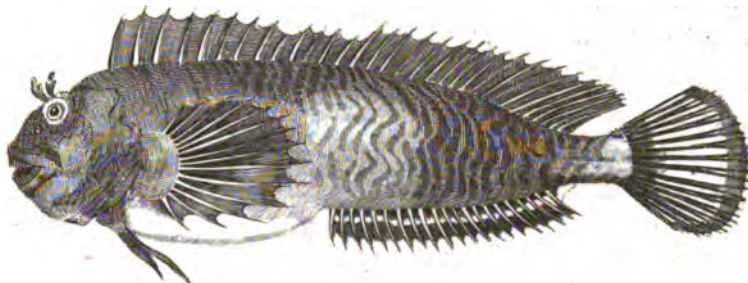
On the head is a small crest-like fin, which it can erect or depress at pleasure. On the top of the head, between the eyes, is a triangular lump pointing backwards, and red about its edges.

The skin at the corner of the upper jaw is loose, and projects.

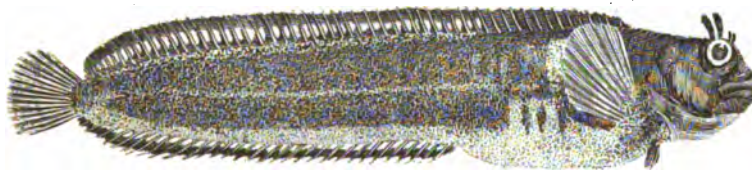
* There being no *English* name for this genus, *Blenny* is given it, derived from the word *Blennius*, the generical term used by *Artedius*, who forms it from *Blenna mucus*, it being of a slimy nature.

From

GATTORUGINE.



CRESTED. BLENNY



SPOTTED BLENNY.



M Griffiths del

From the hind part of the head, almost to the tail, extends the dorsal fin: the ventral fin is small: the vent is placed under the ends of the pectoral fins.

The body is smooth and slippery: the color brown, and spotted.

Scorpioides. <i>Rendel.</i> 204. <i>Gesner pisc.</i> 847.	Blennius pinnulis duabus ad oculos, pinna ani officulorum viginti trium.	91. GATTORUGIN.
Gattorugine <i>Venetii.</i> <i>Wil. Ich.</i> 132.	<i>Arted. synon.</i> 44.	
<i>Raii syn. pisc.</i> 72.	Blennius Gattorugine. <i>Lin. syst.</i> 442.	

THIS curious kind was discovered to be a *British* fish on the *Anglesea* coast.

PLACE.

Its length was seven inches and an half: the body was smooth, and compressed on the sides: the belly a little prominent: the vent situated as in the preceding fish.

DESCRIP.

The teeth slender, almost setaceous, and very close set: between the eyes was a small hollow, and above each, just on the summit, was a narrow loose membrane, trifurcated at the top, which distinguishes this from all other species.

The pectoral fins broad and rounded, consisting of fourteen rays, which extend beyond the webs, making the edges appear scalloped.

The ventral fins like those of others of the genus: the dorsal fin consisted of fourteen strong spiny rays, and nineteen soft rays; the last of which were higher than the spiny rays.

The anal fin had twenty-one rays: the ends in every fin extending beyond their webs.

The

The tail was rounded at the end, and consisted of twelve rays, divided towards their extremities.

This fish in general was of a dusky hue, marked across with wavy lines: the belly of a light ash color.

The lower part of the pectoral fins, and the ends of the ventral fins, of an orange color.

With a smooth head.

92. SMOOTH. La tierce espece de Exocetus? *Belon*, 219. *Shan. Mr. Jago apud Raii syn. pisc.* 164. fig. 10.
Alauda non cristata. Rondel. 205. *Gef.* *Blennius maxilla superiore longiore,*
ner pisc. 18. *capite summo acuminato. Artd.*
Mulgranoc, & Bulcard Cornubiæ. Wil. *synon.* 45.
Ich. 133. *Raii syn. pisc.* 73. *Blennius Pholis. Lin. syst.* 443. *Grenov.*
Cataphractus lævis Cornubiensis, Smooth *Zooph.* No. 259.

PLACE.

WE discovered this species in plenty lying under the stones among the tang on the rocky coasts of *Anglesea*, at the lower water-mark. It was very active and vivacious, and would by the help of its ventral fins creep up between the stones with great facility. It bit extremely hard, and would hang at ones finger for a considerable time. It was very tenacious of life, and would live for near a day out of water.

It feeds on shells and small crabs; whose remains we found in its stomach.

The

Pl. XXXVI.

SMOOTH BLUNNY.

Pl. 92.



J. Mayall del.

CLASS IV. SPOTTED BLENNY.

183

The length in general was five inches : the head large, and sloping suddenly to the mouth : the irides red.

DESCRIP.

The teeth slender, very sharp, and close set : there were twenty-four in the upper, and nineteen in the lower jaw.

The pectoral fins broad and rounded, consisting of thirteen rays : the ventral fins of only two thick rays, separated near their ends.

The dorsal fin consisted of thirty-two soft rays, and reached from the hind part of the head almost to the tail.

The vent was in the middle of the body : the anal fin extended almost to the tail, and consisted of nineteen rays, tipped with white.

The tail rounded at the end, and composed of twelve branched rays.

The color varied, some were quite black, but generally they were of a deep olive, prettily marbled with a deeper color ; others spotted with white : the last often disposed in rows above and beneath the lateral line.

Gunnellus Cornubianus, nonnullis
Butter-fish, q. d. *Liparis*. *Wil. Ich.*
115. *Raii syn. pisc.* 144.

Blennius maculis circiter decem nigris
limbo albicante utrinque ad pinnam
dorsalem. *Arid. synon.* 45.

Blennius Gunnellus. B. *pinna dorsali*

ocellis X nigris. *Lin. syst.* 443. *Faun.* 93. SPOTTED.
Succ. No. 318.

Seb. Mus. III. p. 91. *Tab.* 30. *fig.* 6.

Pholis maculis annulatis ad pinnam
dorsalem, pinnis ventralibus obsole-
tis. *Gronov. Zoon.* No. 267.

THIS species is found in the same place with the preceding, lurking like it under stones, is equally vivacious, and is used as a bait for larger fish.

Its

VIVIPAROUS BLENNY. CLASS IV.

Its length is six inches : the depth only half an inch : the sides very much compressed, and extremely thin.

The head and mouth is small ; the snout points upwards, and the lower jaw slopes considerably towards the throat.

The teeth are very small ; the irides whitish.

The pectoral fins rounded, and of a yellow colour : instead of the ventral fins are two minute spines.

The dorsal fin consists of seventy-eight short spiny rays, and runs the length of the back almost to the tail : on the top of the back are eleven round spots, which reach the lower half of the dorsal fin ; they are black, half encircled with white.

The vent is in the middle of the body ; the anal fin extends from it almost to the tail.

The tail is rounded, and of a yellow color.

The back and sides are of a deep olive ; the belly whitish.

94. VIVIPAROUS.

Mustela marina vivipara, Ael-quappe,

Ael-pute, Ael-modor. *Schonevelde*,

50. *Tab.* 4.

Guffer, Eelpout. *Sib. Scot.* III. 25.

Mustela vivipara Schoneveldii. Wil.

Tab. 122. *Raii syn. pist.* 69.

Blennius capite dorsoque fusco flavescente lituris nigris, pinna ani flava.

Arted. synon. 45.

Blennius viviparus, B. ore tentaculis

duobus. *Lin. syst.* 443.

Tanglake. *Faun. Suec.* No. 317. *Mus.*

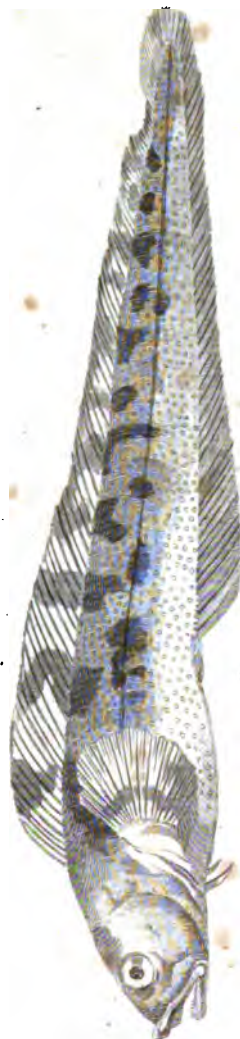
Ad. Fr. I. 69. *Tab.* 32.

Enchelyopus corpore lituris variegato ;

pinna dorsi ad caudam sinuata. Gronov. Zooph. No. 265.

SCHONEVELDE first discovered this species ; Sir Robert Sibbald afterwards found it on the Scotch coasts ; and Linnaeus has described it in his account of his *Swedish Majesty's Museum*.

They



CLASS IV. VIVIPAROUS BLENNY.

185

They are viviparous, bringing forth two or three hundred young at a time. Their season of parturition is a little after the depth of winter. Before *Midsummer* they quit the bays and shores, and retire into the deep, where they are commonly taken. They are a very coarse fish, and eat only by the poor.

They are common in the mouth of the river *Esk*, at *Whitby*, *Yorkshire*; where they are taken frequently from off the bridge.

They sometimes grow to the length of a foot. Their form slender: their skin smooth and slippery. The teeth very minute and sharp: the upper lip thin and skinny.

The dorsal fin commences just behind the head, and joins with that of the tail; but near the tail, the rest are short, so as to form the appearance of a division. The pectoral fins rounded: the ventral consist of only four short rays: the anal extends far, and unites with the tail. The tail round.

The dorsal fin, back, and sides are of a yellowish brown, stained with dusky spots and lines. The end of the tongue, the chin, throat, and anal fin of a fine yellow.

The back-bone is green, as that of a sea-needle.

SECT. III. THORACIC FISH.

XXI.
GOBY.

Eyes placed near each other.
Four branchiostegous rays.
Ventral fins united.

95. BLACK. *Gobio niger*. *Rondel.* 200. *Gefner pisc.* 395. *dors. secunda officulorum quatuordecim. Artd. synon.* 46.
Schwartz *Goeb. Schousvelde,* 36. *Gobius niger. Lin. syst.* 449.
Sea Gudgeon. Rock-fish. *Wil. 186.* *Eleotris capite cathetoplateo, pinnis ventralibus concretis. Gronov. Zooph.*
206. Raii syn. pisc. 76. *Gobius ex nigricante varius, pinna No. 281.*

IT is to this fish that Naturalists have given the synonym of *Kωβιος*, and *Gobio*, names of certain species mentioned by *Aristotle*, *Pliny*, and *Oppian*. The two first have not left any characters for us to distinguish them by; and *Oppian* at once shews that he never intended this kind, as he has placed it among those which are armed with a poisonous spine. *Aristotle* was acquainted with two species; one a sea fish that frequented the rocks, another that was gregarious, and an inhabitant of rivers, which last seems to have been our common gudgeon.

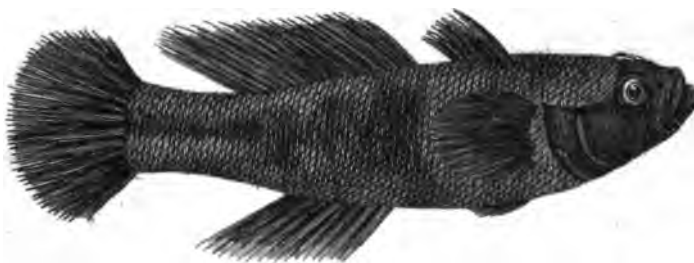
* Formed from *Gobius*, the generic name bestowed by Naturalists on these fish.

This

Pl. XXXVIII.

NP 96

BLACK GOBY.



This species grows to the length of six inches: the body is soft, slippery, and of a slender form: the head is rather large; the cheeks inflated; the teeth small, and disposed in two rows: from the head to the first dorsal fin is a small sulcus. DESCRIP.

The first dorsal fin consists of six rays; the second of fourteen; the pectoral fins of sixteen or seventeen, closely set together, and the middlemost the longest; the others on each side gradually shorter.

The ventral fins coalesce and form a sort of funnel, by which these fish affix themselves immoveably to the rocks, for which reason they are called *Rock-fish*.

The tail is rounded at the end.

The color is brown, or deep olive, mixed with dark streaks, and spotted with black: the dorsal and anal fins are of a pale blue, the rays marked with minute black spots.

Aqua? Atben. Lib. VII. p. 284.

Aphia. Balon, 207.

Aphyia cobites. Rondel. 210. Gesner pisc. 67. Wil. pisc. 207. Raii syn. pisc. 76.

Gobius Aphyia et Marfio dictus. Arted. synon. 47.

Gobius Aphyia. G. fasciis etiam pinarum fuscis. Lin. syst. 450.

96. SPOTTED.

WE saw several of this species taken last summer on our sandy shores in the shrimp nets.

The length of the largest was not three inches: the nose was blunt: the eyes large and prominent, standing far out of the head:

B b 2

the

the irides sappharine; the head flat; the tongue large; teeth in both jaws.

The first dorsal fin consisted of six rays, the second of eleven, and placed at some distance from the other.

The ventral fins are united: the anal consist of eleven rays: the tail is even at the end.

The body is of a whitish color, obscurely spotted with ferruginous: the rays of the dorsal fins, and the tail, barred with the same color.

Large

PL. XXXIX.

ARMED BULL-HEAD.



PL. XXXIX.

RIVER BULL-HEAD.



PL. XXXIX.

Large flat head, armed with sharp spines.
Six branchiostegous rays.

XXII BULL-
HEAD.

Boiros. *Arist. Hist. an. Lib. IV. c. 8.*

Chabot. *Belon, 213.*

Cottus. *Rondel. Fluvial. 202.*

Gobio capitatus. *Gesner pisc. 404.*

Ben Müller. *Schwenckfels Siles. 431.*

Bull-head, Miller's Thumb. *Wil. Ich. 137.*

Raii syn. pisc. 76.
Cottus alepedotus glaber, capite diacan-

tho. *Arted. synon. 76.*

Cottus Gobio, C. lævis, capite spinis

duabus. *Lin. syst. 452.*

Sten-fimpa, Slag-fimpa. *Faun. Suec.*

No. 323.

Koppe. *Kram. 384. Gronov. Zooph.*

No. 270.

97. RIVER.

THIS species is very common in all our clear brooks; it lies almost always at the bottom, either on the gravel or under a stone: it deposits its spawn in a hole it forms in the gravel, and quits it with great reluctance. It feeds on water insects; and we found in the stomach of one the remains of the fresh water shrimp, the *pulex aquatilis* of Ray.

This fish seldom exceeds the length of three inches and an half: the head large, broad, flat, and thin at its circumference, being well adapted for insinuating itself under stones: on the middle part of the covers of the gills is a small crooked spine turning inwards.

The eyes are very small: the irides yellow: the teeth very minute, placed in the jaws and the roof of the mouth.

The body grows slender towards the tail, and is very smooth.

The first dorsal fin consists of six rays, the second of seventeen: the

the pectoral fins are round, and prettily scalloped at their edges, and are composed of thirteen rays; the ventral of only four; the anal of thirteen; the tail of twelve, and is rounded at the end.

The color of this fish is as disagreeable as its form, being dusky, mixed with a dirty yellow: the belly whitish.

98. ARMED. Cataphraetus, Stein-bicker, Müller, Cottus Cataphraetus. C. loricatus, rostro
Turfs-bull. *Schoneveldt*, 30. Tab. 3. verrucosæ 2 bifidis, capite subtus cir-
Cataphraetus *Schoneveldii* Septentr. roso. *Lin. syst.* 451.
Anglis a Pogge. *Wil. Ictb.* 211. Botn-mus. *Faun. Suec.* No. 324.
Raii syn. pisc. 77. *Seb. Mus. III. Tab.* 28. *Granov. Zooph.*
Cottus cirris plurimis corpore octagono. No. 271.
Arad. synon. 77.

THE pogge is very common on most of the *British* coasts.

It seldom exceeds five inches and an half in length, and even seldom arrives at that size.

The head is large, bony, and very rugged: the end of the nose is armed with four short upright spines: on the throat are a number of short white beards.

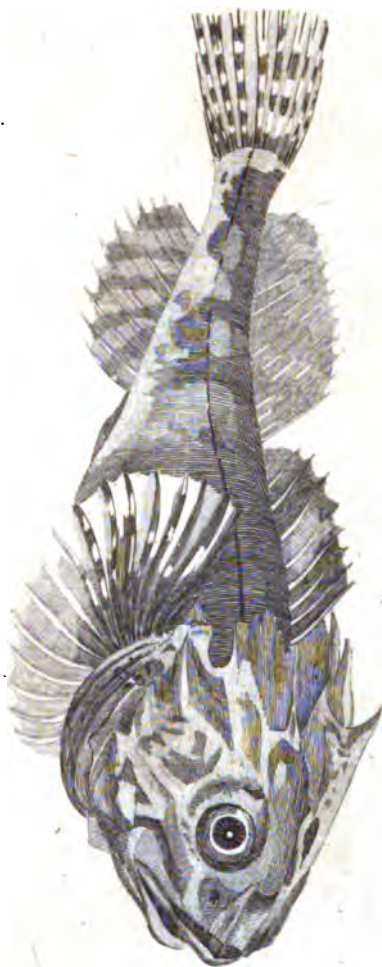
The teeth are very minute, situated in the jaws.

The body is octagonal, and covered with a number of strong bony crusts, divided into several compartments, the ends of which project into a sharp point, and form several echinated lines along the back and sides from the head to the tail.

The first dorsal fin consists of six spiny rays: the second is placed just behind the first, and consists of seven soft rays.

The pectoral fins are broad and rounded, and are composed of fifteen rays.

Scorpions.



FATHER LASSER.



- Scorpius. *Ovid. Halieus*. 116.
 La Scorpene. *Belon*, 242.
 Scorpius marinus, Waelkuke, Buloffe,
 Schorp-fische. *Schonevalde*, 67. tab. 6.
 Scorpænae *Belonii* familis *Cornub*. Fa-
 ther-lasher. *Wil. Ictb.* 138. *Raii syn.*
pisc. 145. Scorpius virginianus. *Idem.*
 142. *Wil. Ictb. App.* 25.
 Cottus scorpius. C. capite spinis pluri-
 bus, maxilla superiore paulo longiore. 99. FATHER-
 LASHER.
Lin. syst. 452.
 Rot-simpa, Skrabba, Skialryta. *Faun.*
Succ. No. 323.
 Ulke. *Crantz. Greenl.* I. 95. *Grenov.*
Zooph. No. 268.
 Sea Scorpion. *Edw.* 284.

THIS fish is not uncommon on the rocky coasts of this island:
 it lurks under stones, and will take a bait.

It does not grow to a large size, feldom exceeding (as far as we
 have seen in the specimens that are taken on our shores) eight or
 nine inches. DESCRIP.

The head is very large, and has a most formidable appearance,
 being armed with vast spines, which it can oppose to any enemy
 that attacks it, by swelling out its cheeks and gill covers to a large
 size.

Et capitis duro nociturus Scorpius ictu.
 The hurtful Scorpion wounding with its head.

The nose, and space contiguous to the eyes, are furnished with
 short sharp spines: the covers of the gills are terminated by ex-
 ceeding long ones, which are both strong and very sharp pointed. SPINES.

The mouth is large: the jaws covered with rows of very small
 teeth: the roof of the mouth is furnished with a triangular spot of
 minute teeth.

The back is more elevated than that of others of this genus: the
 belly

belly prominent: the side-line rough, the rest of the body very smooth, and grows slender towards the tail.

The first dorsal fin consists of eight spiny rays; the second of eleven high soft rays: the pectoral fins are large, and have sixteen; the ventral three; the anal eight: the tail is rounded at the end, and is composed of twelve bifurcated rays.

The color of the body is brown, or dusky and white marbled, and sometimes is found also stained with red: the fins and tail are transparent, sometimes clouded, but the rays barred regularly with brown: the belly is of a silvery white.

AMERICAN.

This kind is very frequent in the *Newfoundland* seas, where it is called *Scolping*: it is also as common on the coast of *Greenland* in deep water near shore. It is a principal food of the natives, and the soup made of it is said to be agreeable as well as wholesome.

Body

Pl. XII.

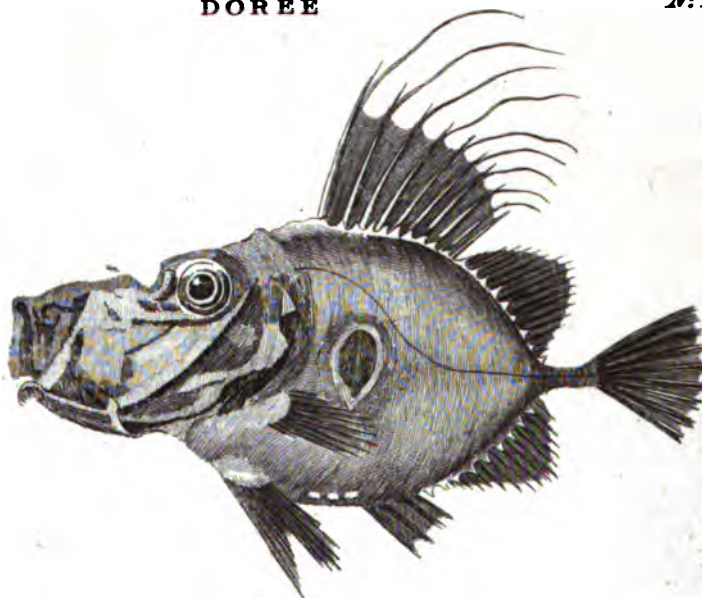
SMEAR DAB.

Nº 106.



DORÉE

Nº 100.



Body very deep, and compressed sideways.
 Very long filaments issuing from the first dorsal fin.
 Seven branchiostegous rays.

XXIII.
 DOREE.

- Xarmanus. Athon. lib. VII. 328. Op-* Zeus ventre aculeato, cauda in extremo 100. DORÉE.
pian Halieut. I. 133. circinato. *Arted. synon. 78.*
Faber? Ovid Halieut. 110. Zeus idem Zeus Faber. Z. cauda rotundata, late-
Faber Gadibus. Plin. lib. IX. c. 18. ribus mediis ocello facto, pinnis ana-
La Dorée. Belon, 146. libus duabus. *Lin. Syst. 454. Gro-*
Faber five Gallus marinus. Rondel. 328. *now. Zool. No. 311.*
Gesner pisc. 369. Zeus spinosus. *Mus. Fred. Ad. 67.*
A Dorée. Wil. Ich. 294. Raii syn. tab. XXXI.
pisc. 99.

SUPERSTITION hath made the *Dorée* rival to the *Hadock*, for the honor of having been the fish out of whose mouth St. Peter took the tribute-money, leaving on its sides those incontestible proofs of the identity of the fish, the marks of his finger and thumb.

It is rather difficult at this time to determine on which part to decide the dispute, for the *Dorée* likewise asserts an origin of its spots of a similar nature, but of a much earlier date than the former. St. Christopher*, in wading through an arm of the sea, hav-

* *Belon, Rondel, also Aldrovand de pisc. 40.* St. Christopher was of a Colossal stature, as is evident from his image in the church of *Notre Dame* at *Paris*, and a still larger at *Auxerre*: the last we think is near seventy feet high. His history is in his name, *χριστοφορος*, being said to have carried our Saviour, when a child, over an arm of the sea.

ing caught a fish of this kind *en passant*, as an eternal memorial of the fact, left the impressions on its sides to be transmitted to all posterity.

In our own country it was very long before this fish attracted our notice, at least as an edible one. We are indebted to that judicious actor and *bon vivant* the late Mr. *Quin*, for adding a most delicious fish to our table, who overcoming all the vulgar prejudices on account of its deformity, has effectually established its reputation.

PLACE.

This fish was supposed to be found only in the southern seas of this kingdom, but it has been discovered last year on the coast of *Anglesea*. Those of the greatest size are taken in the *Bay of Biscay*, off the *French* coasts: they are also very common in the *Mediterranean*; *Ovid* must therefore have styled it *rarus Faber*, on account of its excellency, not its scarcity.

DESCRIP.

The form of this fish is hideous: its body is oval, and greatly compressed on the sides: the head large: the snout vastly projecting: the mouth very wide: the teeth very small.

The eyes great: the irides yellow.

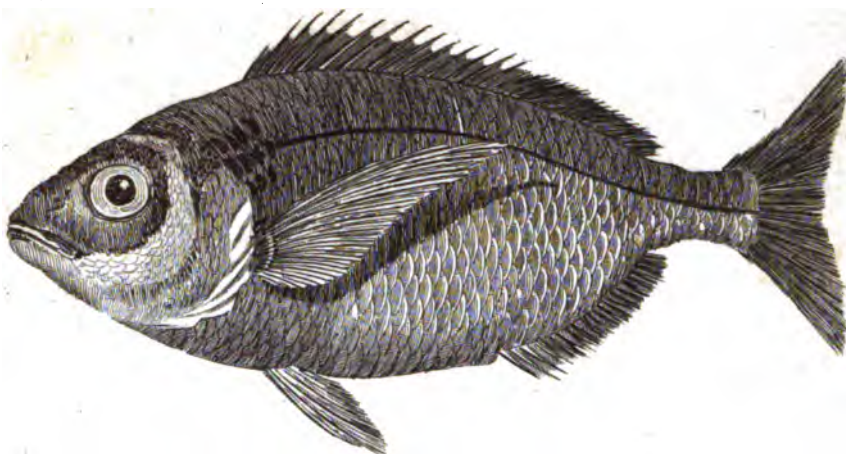
The lateral line oddly distorted, sinking at each end, and rising near the back in the middle: beneath it on each side is a round black spot.

The first dorsal fin consists of ten strong spiny rays, with long filaments, reaching far beyond their ends: the second is placed near the tail, and consists of twenty-four soft rays, the middlemost of which are the longest.

The pectoral fins have fourteen rays, the ventral seven; the first spiny, the others soft: it has two anal fins; the first consists of four sharp spines, the second of twenty-two soft ones, and reaches very near the tail.

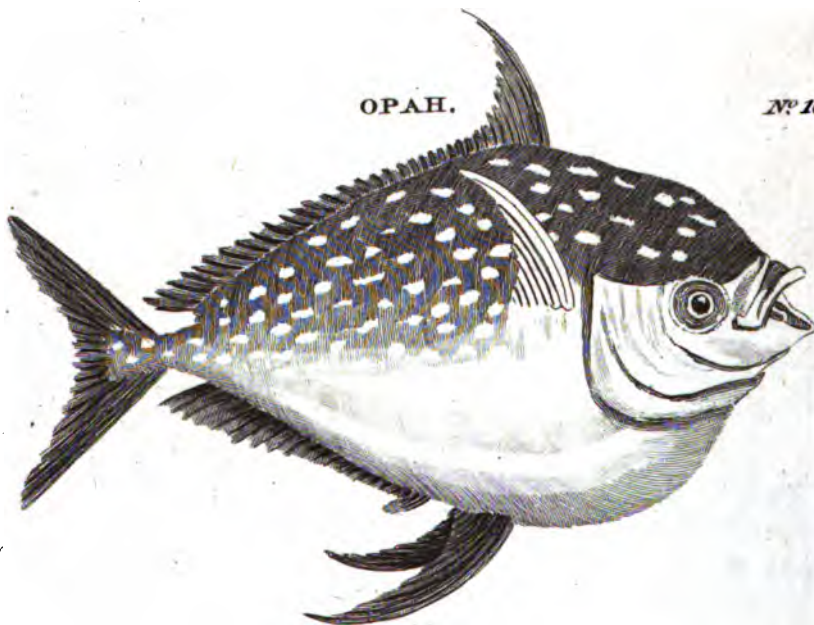
The

LUNULATED
GILT HEAD.



ОПАХ.

Nº 101.



M. Griffiths del

The tail is round at the end, and consists of fifteen branched rays.

The color of the sides is olive, varied with light blue and white, and while living is very resplendent, and as if gilt, for which reason it is called the *Doree*.

The largest fish we have heard of, weighed twelve pounds.

Opah, or King-fish. *Pb. Trans. abr.*

XI. 879. *Tab. V.*

Zeus cauda bifurca, colore argenteo

purpureo splendens. Strom. Soudmer.

323, 325. *Tab. 1. fig. 20.*

101. OPAN.

WE have only five instances of this fish being taken in our seas, four of them in the *North*, viz. twice off *Scotland**, once off *Northumberland*, one in *Filey-Bay, Yorkshire*; and a fifth was caught at *Brixham, in Torbay*, in 1772.

The last weighed a hundred and forty pounds. The length was four feet and an half: the breadth two feet and a quarter: the greatest thickness, only four inches. Its general color was a vivid transparent scarlet varnish, over burnished gold, bespangled with oval silver spots of various sizes: the breast was an hard bone, resembling the keel of a ship: the flesh looked, and tasted like beef†.

* The fish engraved by Sir Robert Sibbald, *Hist. Scot. Tab. 6.* and thus described, is of this kind. *Piscis maculis aureis aspersus non scriptus, pollices 4.2 longus.*

† This description was sent to me by a gentleman, who saw the fish soon after it was taken.

I find a more ample description of another, by Mr. *Robert Harrison*, of *Newcastle*.

Newcastle, Sept. 12. 1769; On *Saturday* last was thrown upon the sands at *Blyth*, a very rare and beautiful fish, weighing between seventy and eighty pounds, shaped like the sea bream. The length was three feet and an half; the breadth from back to belly almost two feet; but the thickness from side to side not above six inches.

The mouth small for the size of the fish, forming a square opening, and without any teeth in the jaws. The tongue thick, resembling that of a man, but rough and thick set with beards or prickles, pointing backwards, so that any thing might easily pass down, but could not easily return back, therefore these might serve instead of teeth to retain its prey. The eyes remarkably large, covered with a membrane, and shining with a glare of gold. The cover of the gills like the salmon.

The body diminishes very small to the tail, which is forked, and expands twelve inches: the gill fins are broad, about eight inches long, and play horizontally: a little behind their insertion the back fin takes its original, where it is about seven inches high, but slopes away very suddenly, running down very near the tail, and at its termination becomes a little broader: the belly fins are very strong, and placed near the middle of the body: a narrow fin also runs from the anus to the tail.

All the fins, and also the tail, are of a fine scarlet; but the colors and beauty of the rest of the body, which is smooth and covered with almost imperceptible scales, beggars all description; the upper part being a kind of bright green, variegated with whitish spots, and enriched with a shining golden hue, like the splendor
of

of a peacock's feather. This by degrees, vanishes in a bright silvery, and near the belly the gold again predominates in a lighter ground than on the back. •

Body

XXIV.
FLOUN-
DER.

Body quite flat, and very thin.
Eyes, both on the same side the head.
Branchiostegous rays from four to seven.

* With the eyes on the right side.

102. HOLI-
BUT.

Hippoglossus. Rondel. 325. *Gesner pisc.* Pleuronectes ocalis a dextris, totus
669. glaber. *Arted. synon.* 31.
Hegibutte, Hilligbutte. Schonevelds, Pleuronectes Hippoglossus. *Lin.* 58.
62. 456.
Holibut, Septentr. Anglis Turbot. Wil. Halg-flundra. *Favn. Succ.* No. 329.
Lab. 99. *Raii syn. pisc.* 33. *Gronov. Zooph.* No. 247.

Size.

THIS is the largest of the genus; some have been taken in our seas weighing from one to three hundred pounds; but much larger are found in those of *Newfoundland, Greenland, and Iceland*, where they are taken with a hook and line in very deep water. They are part of the food of the *Greenlanders**, who cut them into large slips, and dry them in the sun.

They are common in the *London* markets, where they are exposed to sale cut into large pieces. They are very coarse eating, excepting the part which adheres to the side fins, which is extremely fat and delicious, but surfeiting.

* *Craniz. Hist. Greenl.* 1. 98.

They

They are the most voracious of all flat fish. The last year there were two instances of their swallowing the lead weight at the end of a line, with which the seamen were sounding the bottom from on board a ship, one off *Flamborough Head*, the other going into *Tinmouth Haven*: the latter was taken, the other disengaged itself.

The holibut, in respect to its length, is the narrowest of any of this genus except the sole. DESCRIP.

It is perfectly smooth, and free from spines either above or below. The color of the upper part is dusky; beneath of a pure white. We do not count the rays of the fins in this genus, not only because they are so numerous, but because nature hath given to each species characters sufficient to distinguish them by.

These flat fish swim sideways; for which reason *Linnaeus* hath styled them *Pleuronectes*.

<i>Plateia</i> ? <i>Ausonii Epist. ad. Theon.</i> 62.	dextra capitis, lateribus glabris, spi-	103. PLAISE.
<i>Le Quarlet. Belon,</i> 139.	na ad anum, <i>Arted. synon.</i> 30.	
<i>Quadratus. Rondel.</i> 318. <i>Gesner. pisc.</i>	<i>Pleuronectes Plateia. Lin. Syst.</i> 456.	
665.	<i>Gronov. Zooph. No.</i> 246.	
<i>Scholle, Pladise. Schonevelde,</i> 61.	<i>Skalla, Rodsputta. Faun. Suec. No.</i>	
<i>Plaife. Wil. Itb.</i> 96. <i>Raii syn. pisc.</i> 31.	328.	
<i>Pleuronectes oculis et tuberculis sex a</i>		

THESE fish are very common on most of our coasts, and sometimes taken of the weight of fifteen pounds; but they seldom reach that size, one of eight or nine pounds being reckoned a large fish.

The best and largest are taken off *Rye*, on the coast of *Suffex*,
and

and also off the *Dutch* coasts. They spawn on the beginning of *February*.

They are very flat, and much more square than the preceding. Behind the left eye is a row of six tubercles, that reaches to the commencement of the lateral line.

The upper part of the body and fins is of a clear brown, marked with large bright orange-colored spots: the belly is white.

104. FLOUNDER.
DER.

Le Flez. *Belon*, 141.

Passeris tertia species. *Rondel*, 319.

Gesner pisc. 666, 670.

Straß-butte. *Schoneveldt*, 62.

Flounder, Flake, or But. *Wil. Ich.*

980. *Raii syn. pisc.* 32.

Pleuronectes oculis a dextris, linea la-

terali aspera, spinulis supinæ ad radices pinnarum, dentibus obtusis. *Arted. synon.* 31.

Pleuronectes Flesus. *Lin. syst.* 457.

Gronov. Zooph. No. 248.

Flundra, Slatt-skadda. *Fauv. Suec.* No. 327.

THE flounder inhabits every part of the *British* sea, and even frequents our rivers at a great distance from the salt waters; and for this reason some writers call it the *Passer fluviatilis*. It never grows large in our rivers, but is reckoned sweeter than those that live in the sea. It is inferior in size to the plaice, for we never heard of any that weighed more than six pounds.

DESCRIP.

It may very easily be distinguished from the plaice, or any other fish of this genus, by a row of sharp small spines that surround its upper sides, and are placed just at the junction of the fins with the body. Another row marks the side-line, and runs half way down the back.

The color of the upper part of the body is a pale brown, sometimes

times marked with a few obscure spots of dirty yellow: the belly is white.

We have met with a variety of this fish with the eyes and lateral line on the left side. *Linnaeus* makes a distinct species of it under the name of *Pleuronectes Passer*, p. 459; but since it differs in no other respect from the common kind, we agree with Doctor *Gronovius* in not separating them.

La Limande. *Belon*, 142.

Passer asper, five squamosus. *Rondel.*

319. *Gesner pisc.* 665.

Dab. *Wil. Ich.* 79. *Rai syn. pisc.* 32.

Pleuronectes oculis a dextra, squamis asperis, spina ad anum, dentibus ob-

tusis. *Arted. synon.* 33.

Pleuronectes Limanda. Pl. oculis dextris, squamis ciliatis, spinulis ad radicem pinnarum dorsi, anique. Lin. syst. 457.

105. DAB.

THE dab is found with the other species, but is less common. It is in best season during *February, March,* and *April*: they spawn in *May* and *June*, and become flabby and watery the rest of summer. They are superior in goodness to the plaice and flounder, but far inferior in size.

It is generally of an uniform brown color on the upper side, tho' sometimes clouded with a darker. The scales are small and rough, which is a character of this species. The lateral line is extremely incurvated at the beginning, then goes quite strait to the tail. The lower part of the body is white.

DESCRIP.

106. SMEAR-
DAB.*Rhombus levis Cornubiensis maculis nigris*, a Kit. Mr. Jago. *Raii syn.*
p/c. 162. fig. 1.

WE found one of this species at a fishmonger's in *London*, where it is known by the name of the *Smear-dab*.

It was a foot and a half long, and eleven inches broad between fin and fin on the widest part.

The head appeared very small, as the dorsal fin began very near its mouth, and extended very near to the tail. It consisted of seventy nine rays.

The eyes were pretty near each other. The mouth full of small teeth.

The lateral line was much incurvated for the first two inches from its origin, then continued strait to the tail.

The back was covered with small smooth scales, was of a light brown color, spotted obscurely with yellow. The belly white, and marked with five large dusky spots.

It was a fish of goodness equal to the common dab.

Βαγλασσος

Βυγλωσσος. *Atben. lib. viii. p. 288. Op-
pian Halicut. I. 99. La Sole. Belon,*
142.

Buglossus. *Rondel. 320. Gesner pisc.*
666.

Tungen. *Schonevelde, 63.*

Pleuronectes oculis a sinistra corpore

oblongo, maxilla superiore longiore,
squamis utrinque asperis. *Arted. syn.*
32.

*Pleuronectes Solea Lin. syst. 457. Gro-
nov. Zooph. No. 251. Tunga, Solz.
Faun. Suec. No. 326.*

107. SOLE.

THE sole is found on all our coasts, but those on the western shores are much superior in size to those of the north. On the former they are sometimes taken of the weight of six or seven pounds, but towards *Scarborough* they rarely exceed one pound; if they reach two, it is extremely uncommon.

They are usually taken in the trawl-net: they keep much at the bottom, and feed on small shell fish.

It is of a form much more narrow and oblong than any other of the genus. The irides are yellow; the pupils of a bright sapharine color: the scales are small, and very rough: the upper part of the body is of a deep brown: the tip of one of the pectoral fins black: the under part of the body is white: the lateral line strait: the tail rounded at the end.

DESCRIP.

It is a fish of a very delicate flavour; but the small soles are much superior in goodness to large ones*. The chief fishery for them is at *Brixham* in *Torbay*.

* By the ancient laws of the *Cinque* ports, no one was to take soles from the 1st of *November* to the 15th of *March*; neither was any body to fish from sun-setting to sun-rising, that the fish might enjoy their night-food.

D d 2

Solea ?

108. SMOOTH
SOLE.

Solea ? *Ovid. Halient.* 124.
Arnoglossus seu *Solea lævis.* *Wil. Ich.* 102. *Raii syn. pisc.* 34.

THIS, as described by Mr. *Ray*, (for we have not seen it) is extremely thin, pellucid, and white, and covered with such minute scales, and those instantly deciduous, as to merit the epithet smooth.

It is a scarce species, but is found in *Cornwall*, where, from its transparency, it is called the *Lantern Fish*.

It is probable that *Ovid* intended this species, by his *Solea*; for the common kind does by no means merit his description.

Fulgentes SOLÆ candore.

And *Soles* with white resplendent.

** With the eyes on the left side.

109. TUR-
BOT.

Rhombus. *Ovid Halient.*

Le Turbot. *Belon*, 134.

Rhombus aculeatus. *Rondel.* 310.

Gesner pisc. 661.

Steinbutt, Torbutt, Treenbutt, Dorn-

butt. *Schoneveldt*, 60.

Turbot, in the north a Bret. *Wil. Ich.*

94.

Rhombus maximus asper non squamo-
sus. Raii syn. pisc. 31.

Pleuronectes oculis a sinistra, corpore
aspero. Arted. synon. 32.

Pleuronectes maximus. Lin. syst. 459.

Gronov. Zooph. No. 254.

Butta. Faun. Suec. No. 325.

SIZE.

TURBOTS grow to a very large size; we have seen them of three and twenty pounds weight, but have heard of some that

that weighed thirty. They are taken chiefly off the north coast of *England*, and others off the *Dutch* coast; but we believe the last has, in many instances, more credit than it deserves for the abundance of its fish.

The large Turbots, and several other kinds of flat fish, are taken by the hook and line, for they lye in deep water: the method of taking them in wares, or staked nets, is too precarious to be depended on for the supply of our great markets, because it is by meer accident that the great fish stray into them.

FISHERY.

It is a misfortune to the inhabitants of many of our fishing coasts, especially those of the north part of *North Wales*, that they are unacquainted with the most successful means of capture: for their benefit, and perhaps that of other parts of our island, we shall lay before them the method practised by the fishermen of *Scarborough*, as it was communicated to us by Mr. *Travis*.

When they go out to fish, each person is provided with three lines. Each man's lines are fairly coiled upon a flat oblong piece of wicker-work; the hooks being baited, and placed very regularly in the centre of the coil. Each line is furnished with 14 score of hooks, at the distance of six feet two inches from each other. The hooks are fastened to the lines upon snoods of twisted horse-hair, 27 inches in length.

LINES.

When fishing there are always three men in each coble, and consequently nine of these lines are fastened together, and used as one line, extending in length near three miles, and furnished with 2520 hooks. An anchor and a buoy are fixed at the first end of the line, and one more of each at the end of each man's lines; in all four anchors, which are commonly perforated stones, and four buoys made of leather or cork. The line is always laid across the
current.

current. The tides of flood and ebb continue an equal time upon our coast, and when undisturbed by winds run each way about six hours. They are so rapid that the fishermen can only shoot and haul their lines at the turn of tide; and therefore the lines always remain upon the ground about six hours*. The same rapidity of tide prevents their using hand-lines; and therefore two of the people commonly wrap themselves in the sail, and sleep while the other keeps a strict look-out, for fear of being run down by ships, and to observe the weather. For storms often rise so suddenly, that it is with extreme difficulty they can sometimes escape to the shore, leaving their lines behind.

COBLE.

The coble is 20 feet 6 inches long, and 5 feet extreme breadth. It is about one ton burthen, rowed with three pair of oars, and admirably constructed for the purpose of encountering a mountainous sea: they hoist sail when the wind suits.

The five-men boat is 40 feet long and 15 broad, and of 25 tons burthen: it is so called, tho' navigated by six men and a boy, because one of the men is commonly hired to cook, &c. and does not share in the profits with the other five. All our able fishermen go in these boats to the herring fishery at *Yarmouth* the latter end of *September*, and return about the middle of *November*. The boats are then laid up until the beginning of *Lent*, at which time they go off in them to the edge of the *Dogger*, and other places, to fish for turbot, cod, ling, skates, &c. They always take two cobbles on board, and when they come upon their ground, anchor the boat,

* In this space the *myxine glutinosa* of *Linnaeus*, will frequently penetrate the fish that are on the hooks, and entirely devour them, leaving only the skin and bones.

throw

throw out the cobbles, and fish in the same manner as those do who go from the shore in a coble; with this difference only, that here each man is provided with double the quantity of lines, and instead of waiting the return of tide in the coble, return to the boat and bait their other lines; thus hawling one set, and shooting another every turn of tide. They commonly run into harbour twice a week to deliver their fish. The five-men boat is decked at each end, but open in the middle, and has two large lug-sails.

The best bait for all kinds of fish is fresh herring cut in pieces of a proper size; and notwithstanding what has been said to the contrary, they are taken here at any time in the winter, and all the spring, whenever the fishermen put down their nets for that purpose. The five-men boats always take some nets for that end. Next to herrings are the lesser lampreys*, which come all winter by land-carriage from *Tadcaster*. The next baits in esteem are small hadocks cut in pieces, sand worms, muscles, and limpets (called here *Flidders*;) and lastly, when none of these can be had they use bullock's liver. The hooks used here are much smaller than those employed at *Iceland* and *Newfoundland*. Experience has shewn that the larger fish will take a living small one upon the hook, sooner than any bait that can be put on; therefore they use such as the small fish can swallow. The hooks are two inches and an half long in the shank, near an inch wide between the shank and the point. The line is made of small cording, and is always tanned before it is used.

BAIT.

* The *Dutch* also use these fish as baits in the turbot fishery, and purchase annually from the *Thames* fishermen as much as amounts to 700*l.* worth, for that purpose.

Turbot,

Turbots, and all the rays, are extremely delicate in their choice of baits. If a piece of herring or hadock has been twelve hours out of the sea, and then used as bait, they will not touch it.

This and the pearl are of a remarkable square form: the color of the upper part of the body is cinereous, marked with numbers of black spots of different sizes: the belly is white: the skin is without scales, but greatly wrinkled, and mixed with small short spines, dispersed without any order.

110. PEARL.

La Barbue. *Belon*, 137.

Rhombus lævis. *Rondel.* 312. *Gesner*

pisc. 662. Schlichtbutt. *Schoneveldt*, 60.

Rhombus non aculeatus squamosus the
Pearl. Londinens. Cornub. Lug-aleaf.

Wil. Ictb. 95. *Raii syn. pisc.* 31.

Pleuronectes oculis a sinistris, corpore
glabro. Arted. syn. 31.

Pleuronectes Rhombus. Lin. syst 458.

Gronov. Zooph. No. 149.

Pigghvarf. It. W. Gotb. 178.

IT is frequently found in the *London* markets, but is inferior to the turbot in goodness as well as size.

The irides are yellow: the skin is covered with small scales, but is quite free from any spines or inequalities.

The upper side of the body is of a deep brown, marked with spots of dirty yellow: the under side is of a pure white.

Passer

Passer Cornubienfis asper, magno oris hiatu. Mr. Yago. Raii syn. pisc.
163. fig. 2.

III. WHIFF.

THIS bears some resemblance to the *Holibut*. One was brought to me by my fisherman, *October 31, 1775*. Its length was eighteen inches: the greatest breadth not seven, exclusive of the fins.

The mouth extremely large: teeth very small: the under jaw hooks over the upper: the eyes large; and placed on the side.

The scales great, and rough: the side-line uncommonly incurvated at the beginning. After making a sharp angle, goes strait to the tail, and is tuberculated: the tail is rounded.

The color of the upper part of the body is cinereous brown, clouded in parts, and obscurely spotted: the under side white, tinged with red.

XXV.
GILT-
HEAD.

Covers of the gills scaly.
Five branchiostegous rays.
Fore teeth sharp.
Grinders flat.
One dorsal fin, reaching the whole length of the back.
Forked tail.

112. LUNU-
LATED.

Xpυσoφpυς. *Oppian Halieut.* I. 169.

Chrysophrys. *Ovid Halieut.* III.

Aurata Plinii, *Lib.* IX. c. 16.

La Dorade. *Belon*, 186. *Chrysophry*

Cass opusc. 112.

Aurata. *Rondel.* 115. *Gesner pisc.* 110.
112.

Gilt-head or Gilt-poll. *Wil. Ich.* 307.

Raii syn. pisc. 191.

Sparus dorso acutissimo, *linea arcuata*

inter oculos. *Arted. synon.* 63.

Sparus lunula aurea inter oculos. *Lin.*

list. 467. *Grenov. Zooph.* No. 220.

THIS is one of the *pisces saxatiles*, or fish that haunt deep waters on bold rocky shores: those that form this genus, as well as the following, feed chiefly on shell fish, which they comminute with their teeth before they swallow; the teeth of this genus in particular being extremely well adapted for that purpose, the grinders being flat and strong, like those of certain quadrupeds: besides those are certain bones in the lower part of the mouth, which assist in grinding their food.

They are but a coarse fish; nor did the *Romans* hold them in any esteem, except they had fed on the *Lucrine* oyster.

Non

*Non omnis laudem pretiumque AURATA meretur,
Sed cui solus erit concha LUCRINA cibus*.*

No praise, no price a *Gilt-head* e'er will take,
Unfed with oysters of the *Lucrine* lake.

They grow to the weight of ten pounds: the form of the body is deep, not unlike that of a bream: the back is very sharp, and of a dusky green color: the irides of a silvery hue: between the eyes is a semilunar gold colored spot, the horns of which point towards the head: on the upper part of the gills is a black spot, beneath that another of purple.

DESCRIP.

The dorsal fin extends almost the whole length of the back, and consists of twenty-four rays, the eleven first spiny, the others soft: the pectoral fins consist of seventeen soft rays; the ventral of six rays, the first of which is very strong and spiny: the anal fin of fourteen; the three first spiny.

The tail is much forked.

It takes its name from its predominant color; that of the forehead and sides being as if gilt, but the last is tinged with brown.

COLOR.

* *Martial. Lib. XIII. Ep. 90.*

113. RED. Pagrus? *Ovid Halicut.* 107. Sparus rubescens, cute ad radicem pin-
 Le Pagrus. *Belon,* 245. narum dorfi et ani in finem producta.
 Pagrus. *Rondel.* 142. *Gesner pisc.* 656. *Arted. synon.* 64.
 Sea Bream. *Wil. Ictb.* 312. *Raii syn.* Sparus Pagrus. *Lin. fift.* 469.
pisc. 131.

DESCRIP. **T**HIS species grows to a size equal with that of the former :
 its shape and the figure of the teeth are much the same.

The irides are silvery : the inside of the covers of the gills, the mouth, and the tongue, are of a fine red.

At the base of the pectoral fins is a ferruginous spot.

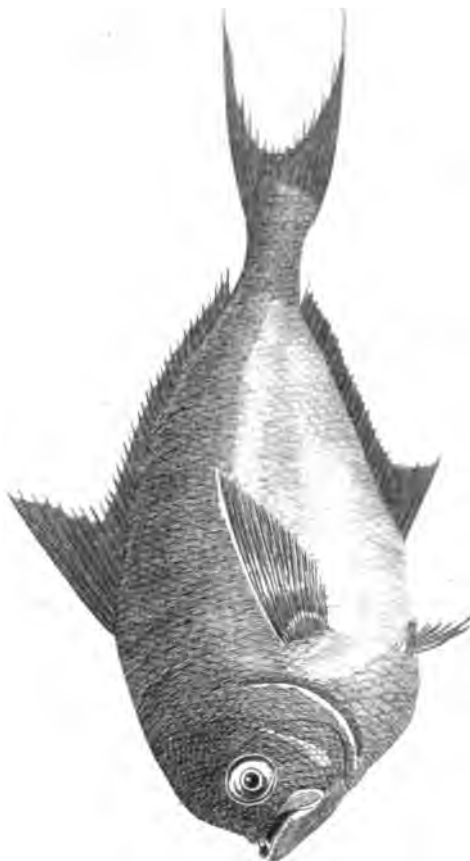
What is peculiar to this species is, that the skin at the end of the dorsal and anal fins is gathered up, and hides the last rays.

The scales are large : the tail forked.

COLOR. The color of the whole body is red.

PL. 114.

TOOTHED GILT-HEAD.



PL. 114.

Brama marina cauda forcipata D. *Jonston. Raii syn. pisc.* 115.

114. TOOTH-
ED.

THIS species was communicated to Mr. Ray by his friend Mr. *Jonston*, a *Yorkshire* gentleman, who informed him it was found on the sands near the mouth of the *Tees*, *Sept.* 18, 1681.

It was a deep fish, formed like a roch, twenty-six inches long, ten broad, and grew very slender towards the tail.

The eyes large, like those of quadrupeds. In the lower jaws were two rows of teeth, slender and sharp as needles; and on each side a slender canine tooth: in the upper only a single row of teeth. The aperture of the gills very large. The body scaly.

In the middle of the back was one fin extending almost to the tail; the seven first rays high, the rest low: behind the vent is another, corresponding: both are entirely covered with scales slated over each other.

The back black; the sides of a brighter color: the belly quite of a silvery brightness.

Covers

XXVI.
WRASSE.

Covers of the gills scaly.

Branchiostegous rays unequal in number*.

Teeth conic, long and blunt at their ends. One tuberculated bone in the bottom of the throat: two above opposite to the other.

One dorsal fin reaching the whole length of the back: a slender skin extending beyond the end of each ray.

Rounded tail.

115. AN-
TIENT.

Vieille, Poule de mer, Gallot, une Wrasse, or Old Wife. *Raii syn. pisc.*
 Roffe. *Belon*, 248. 136.
Turdorum undecimum genus. *Rondel.* Labrus rostro sursum reflexo cauda in
 179. *Gesner pisc.* 1019. extremo circulari. *Arted. synon.* 56.
Turdus vulgarissimus. *Wil. Ictb.* 319. Labrus Tinca. *Lin. syst.* 477.

THIS species is found in deep water adjacent to the rocks.
 It will take a bait, though its usual food is shell-fish, and small crustacea.

It grows to the weight of four or five pounds: it bears some resemblance to a carp in the form of the body, and is covered with large scales.

* *Linnaeus* says six: this species had only four; the second, six; the third and fourth, five. We also find the same variation in the rays of the fins, the numbers being different in fish of the same species, not only of this but of other genera.

The

TEETH.

The nose projects; the lips are large and fleshy, and the one turns up, the other hangs down: the mouth is capable of being drawn in or protruded.

The irides are red: the teeth are disposed in two rows; the first are conic, the second very minute, and as if supporters to the others: in the throat just before the gullet are three bones, two above of an oblong form, and one below of a triangular shape; the surface of each rising into roundish protuberances: these are of singular use to the fish, to grind its shelly food before it arrives at the stomach.

The dorsal fin consists of sixteen sharp and spiny rays, and nine soft ones, which are much longer than the others.

The pectoral fins large and round, and are composed of fifteen rays.

The ventral of six; the first sharp and strong: the anal of three sharp spines, and nine flexible.

The tail is rounded at the end, and is formed of fourteen soft branching rays.

The lateral line much incurvated near the tail.

These fish vary infinitely in color: we have seen them of a dirty red, mixed with a certain duskiness; others most beautifully striped, especially about the head, with the richest colors, such as blue, red, and yellow. Most of this genus are subject to vary; therefore care must be taken not to multiply the species from these accidental tints, but to attend to the form which never alters.

COLOR.

The *Welch* call this fish *Gwrach*, or the old woman; the *French*, *la Vieille*; and the *English* give it the name of *Old Wife*.

THIS

116. BAL-
LAN.

THIS is a kind of *Wrasse*, sent from *Scarborough* by Mr. *Travis*, differing from the other species. They appear during summer in great shoals off *Filey-Bridge*: the largest weigh about five pounds.

It was of the form of the common *wrasse*, only between the dorsal fin and the tail was a considerable sinking: above the nose was a deep sulcus: on the farthest cover of the gills was a depression radiated from the center.

It had only four branchiostegous rays.

The dorsal fin had thirty-one rays, twenty spiny, eleven soft; the last branched, and much longer than the spiny rays.

The pectoral fins had fourteen; the ventral six; the first of which was short and spiny: the anal twelve; the three first spiny, the nine others branched and soft.

The tail was rounded at the end; at the bottom, for about a third part of the way, between each ray was a row of scales.

The color in general was yellow, spotted with orange.

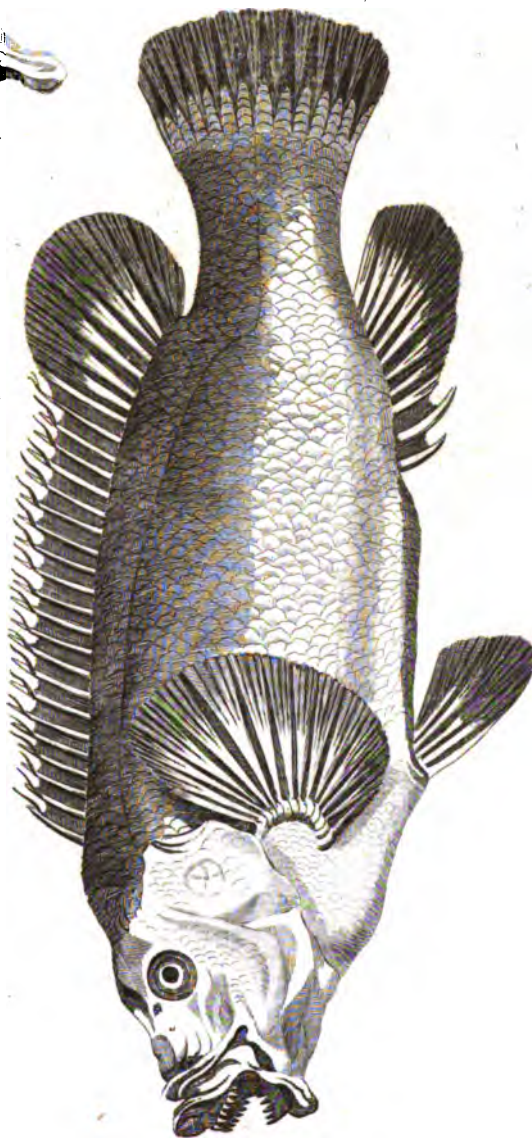
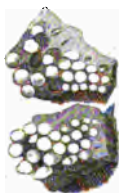
Labrus

PL. 116.



BALLAN.

PL. XIV.



P. Magoll Sculp

J. Wilkinson del

Labrus bimaculata. L. pinna dorsali
ramentacea, macula fusca in latere
medio, et ad caudam. *Lin. Syst.* 477.

Sciaena bimaculata. *Mus. Ad. Fred.* L.
66. tab. XXXI. fig. 66.

117. BIMACULATED.

MR. *Brunnich* observed this species at *Penzance*, and referred me to *Linnaeus's* description of it in the *Museum Ad. Fred.* where it is described under the name of *Sciaena Bimaculata*.

The body is pretty deep, and of a light color, marked in the middle on each side with a round brown spot; on the upper part of the base of the tail is another: the lateral line is incurvated.

DESCRIP.

The branchiostegous rays are six in number*: the first fifteen rays of the dorsal fin are spiny; the other eleven soft, and lengthened by a skinny appendage: the pectoral fins consist of fifteen rays; the ventral of six; the first spiny; the second and third ending in a slender bristle: the anal fin is pointed; the four first rays being short and spiny; the rest long and soft.

* *Linnaeus*, in his last edition, has removed this species from the genus of *Sciaena*, to that of *Labrus*, though it does not agree with the last in his number of branchiostegous rays.

118. TRIMACULATED.

THE species we examined was taken on the coast of *Anglesea*; its length was eight inches.

It was of an oblong form; the nose long; the teeth slender; the fore teeth much longer than the others.

The eyes large: branchiostegous rays, five.

The back fin consisting of seventeen spiny rays, and thirteen soft ones; beyond each extended a long nerve.

The pectoral fins were round, and consisted of fifteen branched rays.

The ventral fins consisted of six rays; the first spiny.

The anal fin of twelve; the three first short, very strong, and spiny; the others soft and branched.

The tail was rounded.

The lateral line was strait at the beginning of the back, but grew incurvated towards the tail.

The body covered with large red scales; the covers of the gills with small ones.

On each side of the lower part of the back fin were two large spots, and between the fin and the tail another.

119. STRIP-ED.

DESCRIP.

THIS was taken off the *Skerry Isles*, on the coast of *Anglesea*; its length was ten inches.

The form was oblong, but the beginning of the back a little arched: the lips large, double, and much turned up: the teeth like those of the preceding: branchiostegous rays, five.

The

PL. XLV.

STRIPED WRASSE.



Nº 119.

The number of rays in the back, pectoral, and ventral fins, the same as in those of the former.

In the anal fin were fifteen rays; the three first strong and spiny.

The tail almost even at the end, being very little rounded: the covers of the gills cinereous, striped with fine yellow.

The sides marked with four parallel lines of greenish olive, and the same of most elegant blue. Color.

The back and belly red; but the last of a much paler hue, and under the throat almost yellow.

Along the beginning of the back fin was a broad bed of rich blue; the middle part white; the rest red.

At the base of the pectoral fins was a dark olive spot.

The ends of the anal fin, and ventral fins, a fine blue.

The upper half of the tail blue; the lower part of its rays yellow.

THIS species was taken off *Anglesea*: its length was eight inches; the greatest depth three: it was of a very deep and elevated form, the back being vastly arched, and very sharp or ridged. 120. GIBBOUS.

From the beginning of the head to the nose, was a steep declivity.

The teeth like those of the others.

The eyes of a middling size; above each a dusky semilunar spot.

The nearest cover of the gills finely serrated.

The sixteen first rays of the back strong and spiny; the other nine soft and branched.

The pectoral fins consisted of thirteen, the ventral of six rays; the first ray of the ventral fin was strong and sharp.

F f 2

The

The anal fin consisted of fourteen rays, of which the three first were strongly aculeated.

The tail was large, rounded at the end, and the rays branched; the ends of the rays extending beyond the webs.

The lateral line was incurvated towards the tail.

The gill covers and body covered with large scales.

COLOR.

The first were most elegantly spotted, and striped with blue and orange, and the sides spotted in the same manner; but nearest the back the orange was disposed in stripes: the back fin and anal fin were of a sea green, spotted with black.

The ventral fins and tail a fine pea green.

The pectoral fins yellow, marked at their base with transverse stripes of red.

121. GOLD-
SINNY.

Goldfinny *Cornubiensium*, Mr. Jago. *Raii syn. pisc.* 163. fig. 3.

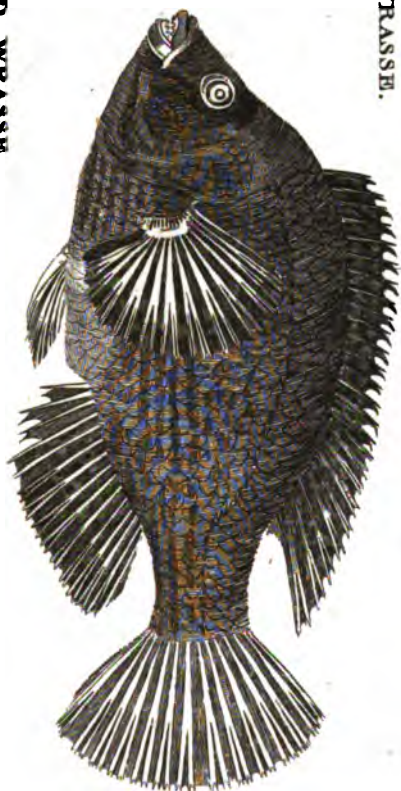
THIS and the two following species were discovered by Mr. Jago on the coast of *Cornwall*: we never had an opportunity of examining them, therefore are obliged to have recourse to his descriptions, retaining their local names.

In the whole form of the body, lips, teeth, and fins, it resembles the *Wrasse*: it is said never to exceed a palm in length: near the tail is a remarkable black spot: the first rays of the dorsal fin are tinged with black.

The *Melanurus* of *Rondeletius* (adds he) takes its name from the black spot near the tail; but in many instances it differs widely from

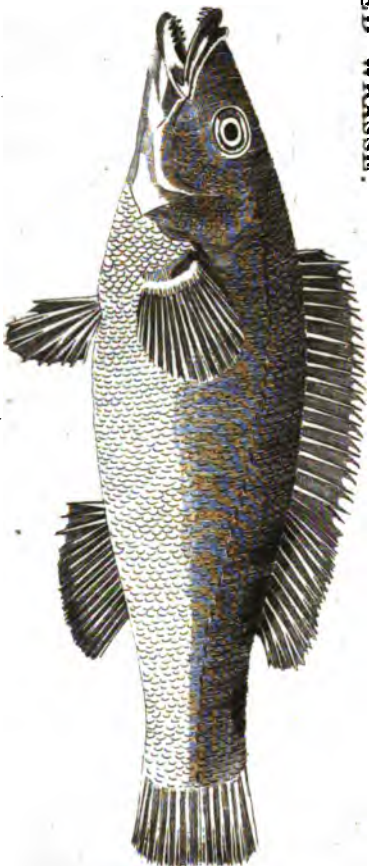
PL. XLVI.

GIBBOUS WRASSE.



PL. 120.

TRUNCULATED WRASSE.



PL. 116.

from this species, the tail of the first is forked, that of the *Goldfinny* is even at the end.

I suspect that this species was sent to me from *Cornwal*. Besides the spot near the tail, there was another near the vent.

In the dorsal fin were sixteen spiny, and nine soft rays: in the pectoral fourteen: in the anal three spiny, eleven soft: in the ventral six. The tail almost even at the end.

Comber *Cornub.* *Raii syn. pisc.* 163. fig. 5?

122. COM-
BER.

I RECEIVED this species from *Cornwal*, and suppose it to be the *Comber* of Mr. *Jago*.

It was of a slender form. The dorsal fin had twenty spiny, eleven soft rays: the pectoral fourteen: the ventral five: the anal three spiny, seven soft. The tail round.

The color of the back, fins, and tail, red: the belly yellow: beneath the lateral line ran parallel a smooth, even stripe from gills to tail, of a silvery color.

Cook (*i. e.* *Coquus*). *Cornubienfum.* *Raii syn. pisc.* 163. fig. 4.

123. COOK.

THIS species, Mr. *Jago* says, is sometimes taken in great plenty on the *Cornish* coasts. It is a scaly fish, and does not grow to any great size. The back is purple and dark blue; the belly

belly yellow. By the figure it seems of the same shape as the Comber, and the tail rounded.

Besides these species we recollect seeing taken at the *Giant's Causeway* in *Ireland*, a most beautiful kind of a vivid green, spotted with scarlet; and others at *Bandooran*, in the county of *Sligo*, of a pale green. We were at that time inattentive to this branch of natural history, and can only say they were of a species we have never since seen.



The

Pl. XLVII.

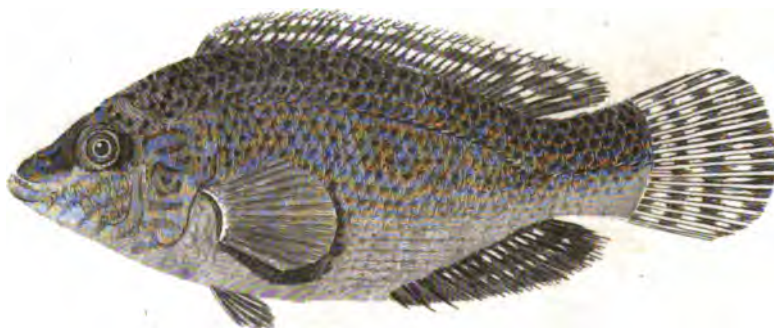
COMBER WRASSE .

Nº 122.



ANTIEN WRASSE ?.

Nº 115.



GOLDSINNY .

Nº 121.



M Griffith del

The edges of the gill-covers serrated.
 Seven branchiostegous rays.
 Body covered with rough scales.
 First dorsal fin spiny; the second soft*.

XXVI.
 PERCH.

Πέρκων Arist. Hist. an. Lib. VI. c. 14.
Perca Ausonii Mosella, 115.
Une Perche de riviere. Belon, 291.
Perca fluviatilis. Rondel. fluviat. 196.
Gesner pisc. 698.
Ein Barfs. Schoneveldt, 55.
A Perch. Wil. Id. 291. Raii syn. pisc.
 97.
Perca lineis utrinque sex transversis

nigris, pinnis ventralibus rubris.
Aried. synon. 66.
Perca fluviatilis. P. pinnis dorsalibus
distinctis, secunda radiis sedecim.
Lin. syst. 481. Gronov. Zooph. No.
 301.
Abboree. Fawn. Suec. No. 332.
Perschling, Barschieger. Kram. 384.
Wulff Borufs. No. 27.

124. COM-
 MON.

THE perch of *Aristotle* and *Ausonius* is the same with that of the moderns. That mentioned by *Oppian*, *Pliny*, and *Athenæus*†, is a sea-fish probably of the *Labrus* or *Sparus* kind, being enumerated by them among some congenerous species. Our perch was much esteemed by the *Romans*:

Nec te delicias mensarum Perca, fletu
Amnigenos inter pisces dignande marinis. AUSONIUS.

* The *Ruffa* is an exception, having only one dorsal fin, but the fourteen first rays of it are spiny.

† *Oppian Halieut. I. 124. Plinii Lib. IX. c. 16. Athenæus Lib. VII. p. 319.*
 It

It is not less admired at present as a firm and delicate fish; and the *Dutch* are particularly fond of it when made into a dish called *Water Soucky*.

It is a gregarious fish, and loves deep holes and gentle streams. It is a most voracious fish, and eager biter: if the angler meets with a shoal of them, he is sure of taking every one.

It is a common notion that the pike will not attack this fish, being fearful of the spiny fins which the perch erects on the approach of the former. This may be true in respect to large fish; but it is well known the small ones are the most tempting bait that can be laid for the pike.

The perch is a fish very tenacious of life: we have known them carried near sixty miles in dry straw, and yet survive the journey.

SIZE.

These fish seldom grow to a large size: we once heard of one that was taken in the *Serpentine* river, *Hyde-Park*, that weighed nine pounds, but that it is very uncommon.

DESCRIP.

The body is deep: the scales very rough: the back much arched: side-line near the back.

The irides golden: the teeth small, disposed in the jaws and on the roof of the mouth: the edges of the covers of the gills serrated: on the lower end of the largest is a sharp spine.

The first dorsal fin consists of fourteen strong spiny rays: the second of sixteen soft ones: the pectoral fins are transparent, and consist of fourteen rays; the ventral of six; the anal of eleven.

The tail is a little forked.

COLOR.

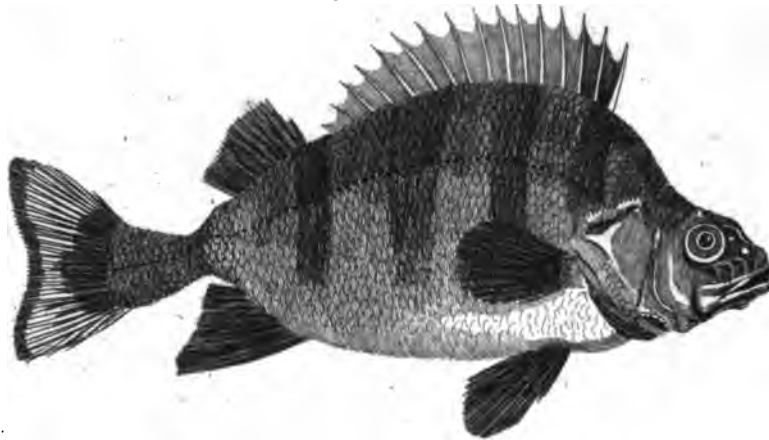
The colors are beautiful: the back and part of the sides being of a deep green, marked with five broad black bars pointing downwards: the belly is white, tinged with red: the ventral fins of a rich scarlet; the anal fins and tail of the same color, but rather paler.

In

Pl. XLVIII.

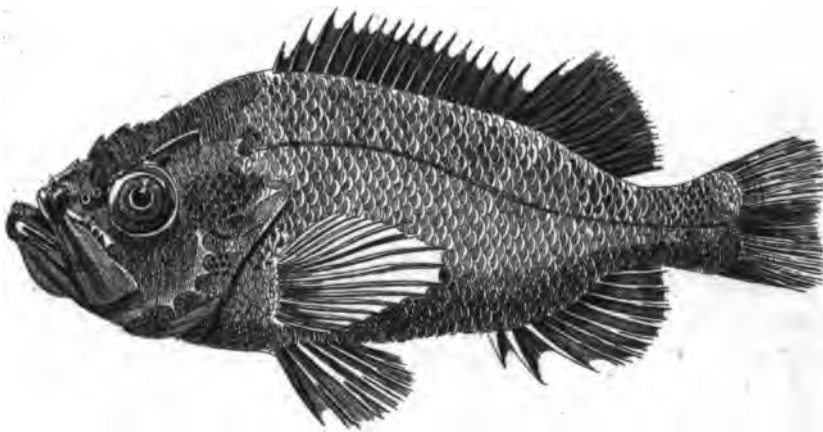
PERCH.

Nº 124.



SEA PERCH.

Nº 126.



M. Griffiths del



The pectoral fins have fifteen soft rays ; the ventral six rays, the first spiny : the anal fourteen rays, the three first spiny, the others soft : the tail is a little forked.

The body is formed somewhat like that of a salmon.

The color of the back is dusky, tinged with blue.

The belly white. In young fish the space above the side line is marked with small black spots.

It is esteemed a very delicate fish.

126. SEA. Une Perche de mer. *Belon*, 163. *Perca marina*. *P. pinnis dorsalis* un-
Perca marina. *Salvian*, 225. *Rondel.* tis XV. spinosis, XIV. muticis, cor-
 182. *Wil. Ictb.* 327. *Rati syn. pisc.* pore lituris variegato. *Lin. fyst.* 483.
 140.

THIS species is about a foot long : the head large and deformed : eyes great : teeth small and numerous. On the head and covers of the gills are strong spines. The dorsal fin is furnished with fifteen strong spiny rays, and fourteen soft : the pectoral with eighteen : the ventral with one spiny, and five soft : the anal with three spiny, and eight soft : the tail, even at the end : the lateral line parallel to the back. The color red, with a black spot on the covers of the gills, and some transverse dusky lines on the sides.

It is a fish held in some esteem at the table.

Cernua.

- Cernua. *Belon*, 186.
 Percæ fluviatilis genus minus. *Gesner pisc.* 701.
 Aspredo. *Caii opusc.* 107.
 Ein stuer, stuerbaris. *Schoneveldt*, 56.
 Cernua fluviatilis. *Wil. Ictb.* 334.
 Ruffe. *Raii syn. pisc.* 143.
 Perca dorso monopterygio, capite cavernoso. *Arted. syn.* 68.
 Perca cernua. P. pinnis dorsalibus unitis radius 27. spinis 15. cauda bifida. *Lin. syst.* 487. *Gronov. Zooph.* No.
 Giers, Snorgers. *Faun. Suec.* No. 119.
 Schroll, Pfaffenlaus. *Schaeff. pisc.* 37. *Tab. II. Wulff Borusi.* No. 35.
 127. RUFFE.

THIS fish is found in several of the *English* streams: it is gregarious, assembling in large shoals, and keeping in the deepest part of the water.

It is of a much more slender form than the perch, and seldom exceeds six inches in length.

The teeth are very small, and disposed in rows.

It has only one dorsal fin extending along the greatest part of the back: the first rays, like those of the perch, are strong, sharp, and spiny; the others soft.

The pectoral fins consist of fifteen rays; the ventral of six; the anal of eight; the two first strong and spiny: the tail a little bifurcated.

The body is covered with rough compact scales.

The back and sides are of a dirty green, the last inclining to yellow, but both spotted with black.

The dorsal fin is spotted with black: the tail marked with transverse bars.

128. BLACK. The Black Fish. Mr. Jago. *Borlase Cornwall*, 271. *Tab. XXV. fig. 8.*

MR. Jago has left so brief a description of this fish, that we find difficulty in giving it a proper class: it agrees with the *Ruffe* in the form of the body, and the smallness of the teeth, in having a single extensive fin on the back, a forked tail, and being of that section of bony fish, termed *Thoracic*: these appear by the figure, the teeth excepted. The other characters must be borrowed from the description.

“It is smooth, with very small thin scales, fifteen inches long, three quarters of an inch broad; head and nose like a peal or trout; little mouth; very small teeth, beginning from the nose four inches and three quarters, near six inches long; a forked tail; a large double nostril. Two taken at *Loe*, *May* 26, 1721, in the *Sean*, near the shore, in sandy ground with small ore weed.”

Three

STICKLEBACKS.



Three branchiostegous rays.

The belly covered with bony plates.

One dorsal fin, with several sharp spines between it and the head.

XXVIII.
STICKLE
BACK.

La Grande Espinoche, un Epinard,
une Artiere. *Belon*, 328.

Pisciculi aculeati prius genus. *Rondel.*
fluviat. 206. *Gesner pisc.* 8.

Stickleback, Banstickle, or Sharpling.

Wil. Ictb. 341. *Raii syn. pisc.* 145.

Gasterosteus aculeis in dorso tribus.

Arted. synon. 80.

Gasterosteus aculeatus. *Lin. f.* 489.

Gronov. Zooph. No. 456.

Spigg, Horn-fisk. *Fann. Suec.* No.
336.

Stichling, Stachel-fisch. *Wulff Boruss.*
No. 37.

129. THREE
SPINED.

THESE are common in many of our rivers, but no where in greater quantities than in the *Fens* of *Lincolnshire*, and some of the rivers that creep out of them. At *Spalding* there are, once in seven or eight years, amazing shoals that appear in the *Welland*, and come up the river in form of a vast column. They are supposed to be the multitudes that have been washed out of the fens by the floods of several years, and collected in some deep hole, till overcharged with numbers, they are periodically obliged to attempt a change of place. The quantity is so great, that they are used to manure the land, and trials have been made to get oil from them. A notion may be had of this vast shoal, by saying that a man employed by the farmer to take them, has got for a considerable time four shillings a day by selling them at a halfpenny per bushel.

This

DESCRIP.

This species seldom reaches the length of two inches : the eyes are large : the belly prominent : the body near the tail square : the sides are covered with large bony plates, placed transversely.

On the back are three sharp spines, that can be raised or depressed at pleasure : the dorsal fin is placed near the tail : the pectoral fins are broad : the ventral fins consist each of one spine, or rather plate, of unequal lengths, one being large, the other small ; between both is a flat bony plate, reaching almost to the vent : beneath the vent is a short spine, and then succeeds the anal fin.

The tail consists of twelve rays, and is even at the end.

The color of the back and sides is an olive green ; the belly white ; but in some the lower jaws and belly are of a bright crimson.

730. TEN
SPINED.

La petite Espinoche. Belon, 328.

Pisciculi aculeati alterum genus. Ron-

del. fluviat. 206. Gesner pisc. 8.

Lesser Stickleback. Wil. Itb. 342.

Raii syn. pisc. 145.

Gasterosteus aculeis in dorso decem.

Arted. synon. 80.

Gasterosteus pungitius. Lin. syst. 491.

Gronov. Zooph. No. 405.

Benunge, Gaddfur, Gorquad. Favn.

Succ. No. 337.

THIS species is much smaller than the former, and of a more slender make.

The back is armed with ten short sharp spines, which do not incline the same way, but cross each other.

The sides are smooth, not plated like those of the preceding : in other particulars it resembles the former.

The color of the back is olive : the belly silvery.

Aculeatus,

CLASS IV: FIFTEEN SPINED S. BACK.

235

Aculeatus, five Pungitius marinus longus, Stein-bicker, Erskruper. *Schone-
valde*, 10. *Tab.* IV. *Sib. Scot.* III.
24. *Tab.* 19.
Aculeatus marinus major. *Wil. Ictb.*
340. *App.* 23. *Raii syn. pisc.* 145.

Gasterosteus aculeis in dorso quindecim.
Arted. synon. 81.
Gasterosteus spinachia. *Lin. Syst.* 492.
Gronov. Zooph. No. 407. *Faun. Suec.*
No. 338.

131.
FIFTEEN
SPINED.

THIS species inhabits the sea, and is never found in fresh-
water.

Its length is above six inches: the nose is long and slender: the
mouth tubular: teeth small.

The fore-part of the body is covered on each side with a row of
bony plates, forming a ridge; the body afterwards grows very
slender, and is quadrangular.

Between the head and the dorsal fin are fifteen small spines: the
dorsal fin is placed opposite the anal fin: the ventral fins are
wanting.

The tail is even at the end.

The color of the upper part is a deep brown: the belly white.

Seven

XXIX.
MACKREL.

Seven branchiostegous rays.

Several small fins between the dorsal fin and the tail.

132. COM-
MON.

- Σαμψρος. Arist. Hist. an. Lib. VI. c. 17. IX. c. 2. Athenæus, Lib. III. 121. VII. 321. Oppian Halieut. I. 142.*
Scomber. Ovid Halieut. 94. Plinii Lib. IX. c. 15. XXXI. c. 8.
Macarello, Scombro. Salvian. 241.*
Le Macreau. Belon, 197.
Scomber. Rondel. 233. Gesner pisc. 841. (pro 861.)
- Mackerel. Schonevelds, 66.*
Mackrell, or Macarel. Wil. Ich. 181.
Raii syn. pisc. 58.
Scomber pinnulis quinque in extremo dorso, polypterygio, aculeo brevi ad anum. Artd. synon. 48.
Scomber Scomber. Lin. syst. 492.
Gronov. Zooph. No. 304.
Mackrill. Faun. Suec. No. 339.

THE mackrel is a summer fish of passage that visits our shores in vast shoals. It is less useful than other species of gregarious fish, being very tender, and unfit for carriage; not but that it may be preserved by pickling and salting, a method, we believe, practised only in *Cornwall*†, where it proves a great relief to the poor during winter.

GARUM.

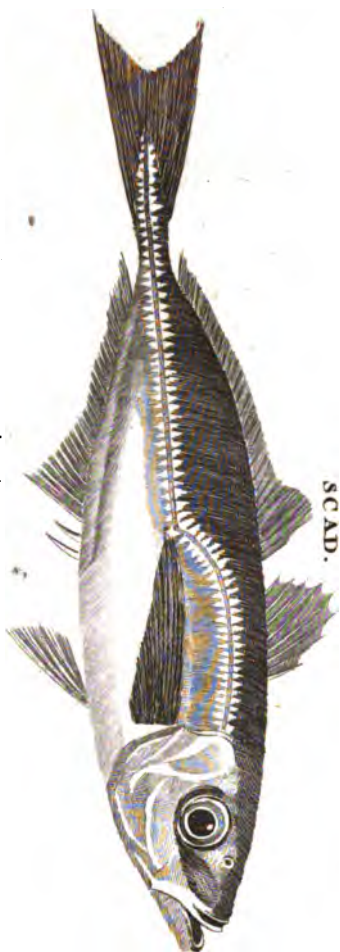
It was a fish greatly esteemed by the *Romans*, because it furnished the pretious *Garum*, a sort of pickle that gave a high relish to their sauces, and was besides used medicinally. It was drawn from different kinds of fish, but that made from the mackrel had the pre-

* This is the first opportunity we have had of looking into *Salvianus*, whose *Italian* synonyms we make use of.

† *Borlase Cornwall*, 269.

ference :

Pl. II.



Nº 134.



MACKREL.

Nº 135.

ference: the best was made at *Carthagera*, vast quantities of mackrel being taken near an adjacent isle, called from that circumstance, *Scombraria**; and the *Garum*, prepared by a certain company in that city, bore a high price, and was distinguished by the title of *Garum Sociorum*†.

This fish is easily taken by a bait, but the best time is during a fresh gale of wind, which is thence called a *mackrel* gale.

In the spring the eyes of *mackrel* are almost covered with a white film; during which period they are half blind. This film grows in winter, and is cast the beginning of summer.

It is not often that it exceeds two pounds in weight, yet we heard that there was one sold last summer in *London* that weighed five and a quarter.

SIZE.

The nose is taper and sharp-pointed: the eyes large: the jaws of an equal length: the teeth small, but numerous.

DESCRIP.

The form of this fish is very elegant.

The body is a little compressed on the sides: towards the tail it grows very slender, and a little angular.

The first dorsal fin is placed a little behind the pectoral fin, is triangular, and consists of nine or ten stiff rays; the second lies at a distance from the other, and has twelve soft rays; the pectoral twenty; the ventral six: at the base of the anal fin is a strong spine.

Between the last dorsal fin and the tail, are five small fins, and the same number between the anal fin and the tail.

The tail is broad and semilunar: the color of the back and sides above the lateral line, is a fine green, varied with blue, marked

COLOR.

* *Strabo Lib. III. 109.*

† *Plinii Lib. XXXI. c. 8.*

with black lines, pointing downwards; beneath the line the sides and belly are of a silvery color.

It is a most beautiful fish when alive; for nothing can equal the brilliancy of its color, which death impairs, but does not wholly obliterate.

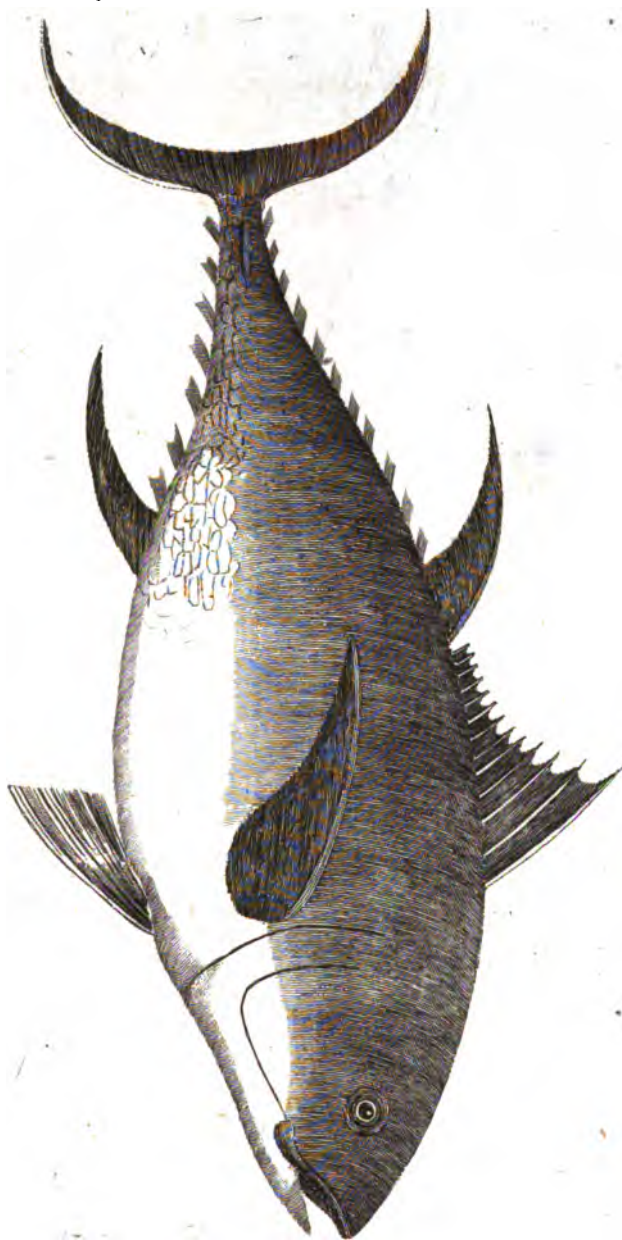
233. TUNNY. *Θύνος*. *Arist. Hist. an. Lib. II. c. 13.* Tunny fish, or Spanish Mackrell. *Wil. Istb. 176. Raii syn. pisc. 57. Sibbald Scot.*
Sec. Athenæus, Lib. VII. 301. Oppian Halieut. III. 620.
Thunnus. Ovid Halieut. 95. Plinii Lib. IX. c. 15. Scomber pinnulis octo vel novem in extremo dorso, ex sulco ad pinna ventrales. *Arted. synon. 49.*
Tonno. Salvian. 123. Scomber Thunnus. *Sc. pinnulis utrinque octo. Lin. syst. 493. Gronov. Zooph. No. 305.*
Le Thon. Belon, 99.
Thunnus. Rondel. 241. Gesner pisc. 957.
Thunnus vel orcyneus. Schonevelde, 75.

THE tunny was a fish well known to the ancients, it made a considerable branch of commerce; the time of its arrival into the *Mediterranean* from the ocean was observed, and stations for taking them established in places it most frequented; the eminencies above the fishery were styled *Θυννοσκοπεία**, and the watchmen that gave notice to those below of the motions of the fish, *Θυννοκόποι*†. From one of the former the lover in *Theocritus* threatened to take a desperate leap, on account of his mistress's cruelty.

* *Strabo Lib. V. 156.*

† *Oppian Halieut. III. 638.* This person answers to what the *Cornish* call a *Haer*, who watches the arrival of the pilchards.

P.LII.



TUNNY.

MP 183.

ὤν ἑπαινεῖς ?

Τὰν βάλταν ἀποδὺς εἰς κήματα τῆνα ἄλυσμον
Ὡπὲρ τὼς ΘΥΝΝΩΣ σκοπιᾶζεται Ὀλπίς ὁ γριπεύς.

Do you not hear ? then, rue your Goat-herd's fate,
For, from the rock where *Olpis* doth descry
The numerous *Tunny*, I will plunge and die.

The very same station, in all probability, is at this time made use of, as there are very considerable thunny fisheries on the coast of *Sicily*, as well as several other parts of the *Mediterranean**, where they are cured, and make a great article of provision in the adjacent kingdoms. They are caught in nets, and amazing quantities are taken, for they come in vast shoals, keeping along the shores.

They frequent our coasts, but not in shoals like the TUNNIES of the *Mediterranean*. They are not uncommon in the *Lochs* on the western coast of *Scotland*; where they come in pursuit of herrings; and, often during night, strike into the nets, and do considerable damage. When the fishermen draw them up in the morning, the TUNNY rises at the same time towards the surface, ready to catch the fish that drop out. On perceiving it, a strong hook baited with a herring, and fastened to a rope, is instantly flung out, which the TUNNY seldom fails to take. As soon as hooked, it loses all spirit; and after a very little resistance, submits to its fate. It is dragged to the shore and cut up, either to be sold fresh to

* Many of them are the same that were used by the antients, as we learn from *Oppian* and others.

people who carry it to the country markets, or is preserved salted in large casks.

The pieces, when fresh, look exactly like raw beef; but when boiled turn pale, and have something of the flavor of salmon.

One, which was taken when I was at *Inveraray* in 1769, and was weighed for my information, weighed 460 pounds.

The fish, I examined, was seven feet ten inches long: the greatest circumference five feet seven; the left near the tail one foot six. The body was round and thick, and grew suddenly very slender towards the tail; and near that part was angular. The *irides* were of a pale green: the teeth very minute.

The first dorsal fin consisted of thirteen strong spines; which, when depressed, were so concealed in a deep slit in the back, as to be quite invisible till very closely inspected. Immediately behind this fin was another, tall and falciform: almost opposite to it, was the anal fin, of the same form. The spurious fins were of a rich yellow color: of these there were eleven above, and ten below.

The tail was in form of a crescent; and two feet seven inches between tip and tip.

The skin on the back was smooth, very thick, and black. On the belly the scales were visible. The color of the sides and belly silvery, tinged with cærulean and pale purple: near the tail marbled with grey.

They are known on the coast of *Scotland* by the name of *Mackrel-fure*: *Mackrel*, from being of that genus; and *fure*, from the *Danish*, *stor*, great.

Sauro. *Salvian.* 79.

Un Sou, Macreau bastard. *Belon*, 186.

Trachurus. *Rondel.* 233.

Lacertus *Bellenis.* *Gesner pisc.* 467.

Museken, Stocker. *Schoneveldt*, 75.

Scad, Horse-mackrell. *Wil. Ichth.* 290.

Raii syn. pisc. 92.

Scomber linea laterali aculeata, pinna
ani officulorum 30. *Arted. synon.*
50.

Scomber Trachurus. Sc. pinnis unitis,
spina dorsali recumbente, linea late-
rali loricata. *Lin. syst.* 494. *Grenov.*
Zooph. No. 308.

134. SCAD

THAT which we examined was sixteen inches long: the nose sharp; the eyes very large; the irides silvery: the lower jaw a little longer than the upper: the edges of the jaws were rough, but without teeth.

On the upper part of the covers of the gills was a large black spot.

The scales were large and very thin: the lower half of the body quadrangular, and marked each side with a row of thick strong scales, prominent in the middle, extending to the tail.

The first dorsal fin consisted of eight strong spines: the second lay just behind it, and consisted of thirty-four soft rays, and reached almost to the tail. The pectoral fins narrow and long, and composed of twenty rays: the ventral of six branched rays.

The vent was in the middle of the belly; the anal fin extended from it to the tail, which was greatly forked.

The head and upper part of the body varied with green and blue: the belly silvery.

This fish was taken in the month of *October*; was very firm and well tasted, having the flavor of mackrel.

Head

XXX.
SURMUL-
LET.

Head compressed, steep, and covered with scales.
Two branchiostegous rays.
Body covered with large scales, easily dropping off.

135. RED. Τρίγλη? *Arist. Hist. an. Lib. II. Op-* Petermanneken, Goldeken. *Schoneveldt,*
pian Halieut. I. 590. 47.
Τρίγλη Σώφρων. *Atbenæus, Lib. VII.* Mullus *Bellonii. Wil. Ictb. 285. Raii*
325. *syn. pisc. 90.*
Mullus. *Ovid Halieut. 123. Plinii* Trigla capite glabro, cirris geminis
Lib. IX. c. 17. in maxilla inferiore. *Arted. syn.*
Trigla. *Salvian. 235.* 71.
Le Rouget barbé, Surmurlet. *Belon,* Mullus cirris geminis, corpore rubro.
170. *Lin. syst. 495. Gronov. Zooph. No.*
Mullus barbatus. *Rondel. 290. Gesner* 286.
pisc. 565.

THIS fish was highly esteemed by the *Romans*, and bore an exceeding high price. The capricious epicures of *Horace's** days, valued it in proportion to its size; not that the larger were more delicious, but that they were more difficult to be got. The price that was given for one in the time of *Juvenal*, and *Pliny*, is a striking evidence of the luxury and extravagance of the age:

Mullum sex millibus emit

Æquantem sane paribus sestertia libris †.

The lavish slave

Six thousand pieces for a Mullet gave,

A sesterc for each pound.

DRYDEN.

* *Sat. Lib. II. f. II. 33.*

† *Juvenal Sat. IV. 481. 8s. 9d.*

But

But *Afinius Celer* *, a man of consular dignity, gave a still more unconscionable sum, for he did not scruple bestowing eight thousand nummi, or sixty-four pounds eleven shillings and eight-pence, for a fish of so small a size as the mullet; for according to *Horace*, a *Mullus trilibris*, or one of three pounds, was a great rarity; so that *Juvenal's* spark must have had a great bargain in comparison of what *Celer* had.

But *Seneca* says that it was not worth a farthing, except it died in the very hand of your guest: that such was the luxury of the times, that there were stews even in the eating rooms, so that the fish could at once be brought from under the table, and placed on it: that they put the mullets in transparent vases, that they might be entertained with the various changes of its rich color while it lay expiring †. *Apicius* ‡, a wonderful genius for luxurious inventions, first hit upon the method of suffocating them in the exquisite *Carthaginian* § pickle, and afterwards procured a rich sauce from their livers. This is the same gentleman whom *Pliny*, in another place, honors with the title of *Nepotum omnium altissimus gurgis* ||, an expression too forcible to be rendered in our language.

* *Plin. Lib. IX. c. 17.*

† *In cubili natant pisces: et sub ipsa mensa capitur, qui statim transferitur in mensam: parum videtur recens mullus nisi qui in convivæ manu moritur. Vitreis ollis inclusi offeruntur, et observatur morientium color, quem in multas mutationes laetante spiritu vertit. Seneca Nat. Quæst. Lib. III. c. 16.*

‡ *Ad omne lusus ingenium mirus.*

§ *Gatum Sociorum*, vide p. 222.

|| *Lib. X. c. 48.*

We

STRIPED SURMULLET. CLASS IV.

We have heard of this species being taken on the coast of *Scotland*, but had no opportunity of examining it; and whether it is found in the west of *England* with the other species, or variety, we are not at this time informed. *Salvianus* makes it a distinct species, and says, that it is of a purple color, striped with golden lines, and that it did not commonly exceed a palm in length: no wonder then that such a prodigy as one of six pounds should so captivate the fancy of the *Roman* epicure.

Mr. *Ray* establishes some other distinctions, such as the first dorsal fin having nine rays, and the color of that fin, the tail, and the pectoral fins, being of a very pale purple.

On these authorities we form different species of these fish, having only examined what *Salvianus* and Mr. *Ray* call the *Mullus major*, which we describe under the title of

136. STRIP-
ED.

Mullus major. Salvian. 236.

Mullus major noster et Salviani. 95.
Cornubiensibus.

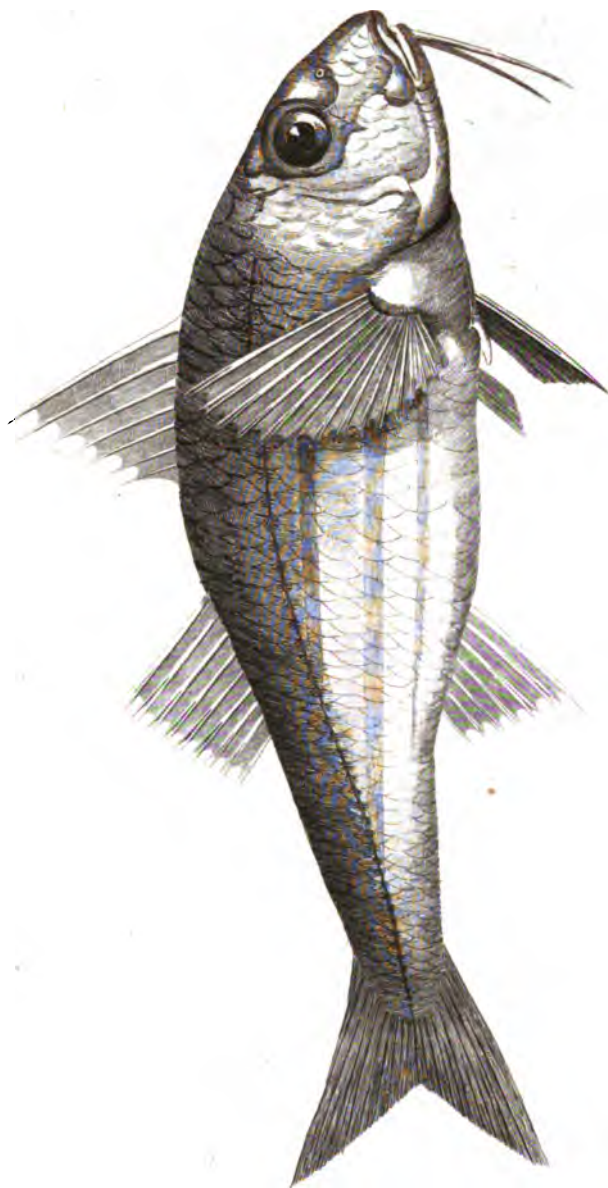
A Surmullet. *Wil. Ictb. 285. Raii syn. pisc. 91.*

Trigla capite glabro, lineis utrinque quatuor luteis, longitudinalibus, parallelis. Arted. synon. 72.

Mullus cirris geminis lineis luteis longitudinalibus. Lin. Syst. 496.

THIS species was communicated to us by Mr. *Pitfield* of *Exeter*: its weight was two pounds and an half; its length was fourteen inches; the thickest circumference eleven. It appears on the coast of *Devonshire* in *May*, and retires about *November*.

The head steep: the nose blunt: the body thick: the mouth small: the lower jaw furnished with very small teeth: in the roof
of



P. Magellanicus

CLASS IV. STRIPED SURMULLET.

341

of the mouth is a rough hard space: at the entrance of the gullet above is a single bone, and beneath are a pair, each with echinated surfaces, that help to comminute the food before it passes down.

From the chin hung two beards, two inches and a half long.

The eyes large: the irides purple: the head and covers of the gills very scaly.

The first dorsal fin was lodged in a deep furrow, and consisted of six strong, but flexible rays; the second of eight; the pectoral fins of sixteen; the ventral of six branched rays; the anal of seven: the tail is much forked.

The body very thick, and covered with large scales; beneath them the color was a most beautiful rosy red^{*}; the changes of which, under the thin scales, gave that entertainment to the *Roman* epicures as above mentioned: the scales on the back and sides were of a dirty orange; those on the nose a bright yellow: the tail a reddish yellow.

The sides were marked lengthways with two lines of a light yellow color: these, with the red color of the dorsal fins, and the number of their rays, Mr. Ray makes the character of the *Cornish Surmullet*: these are notes so liable to vary by accident, that till we receive further information from the inhabitants of our *western* coasts, where these fish are found, we shall remain doubtful whether we have done right in separating this from the former, especially as *Doctor Gronovius* has pronounced them to be only varieties.

* This color is most vivid during summer.

XXXI.
GURNARD.

Nose sloping.
 Head covered with strong bony plates.
 Seven branchiostegous rays.
 Three slender appendages at the base of the pectoral fins.

137. GREY. Gurnatus seu Gurnardus griseus, the Grey Gurnard. *Wil. Ich.* 279. *Raii synon.* 74. *Trigla Gurnardus*, Tr. digitis ternis dorso maculis nigris rubrisque. *Lin. syn. pisc.* 88. *Trigla vario rostro diacantho, aculeis* *Syst.* 497. *Granov. Zooph.* No. 283. *geminis ad utrumque oculum. Arted.*

THE nose pretty long, and sloping: the end bifurcated, and each side armed with three short spines.

The eyes very large; above each were two short spines: the forehead and covers of the gills silvery; the last finely radiated.

The teeth small, placed in the lower and upper jaws, in the roof of the mouth, and base of the tongue.

Nostrils minute, and placed on the sides of the nose.

On the extremity of the gill covers was a strong, sharp, and long spine: beneath that, just above the pectoral fins, another.

The first dorsal fin consisted of eight spiny rays; the sides of the three first tuberculated.

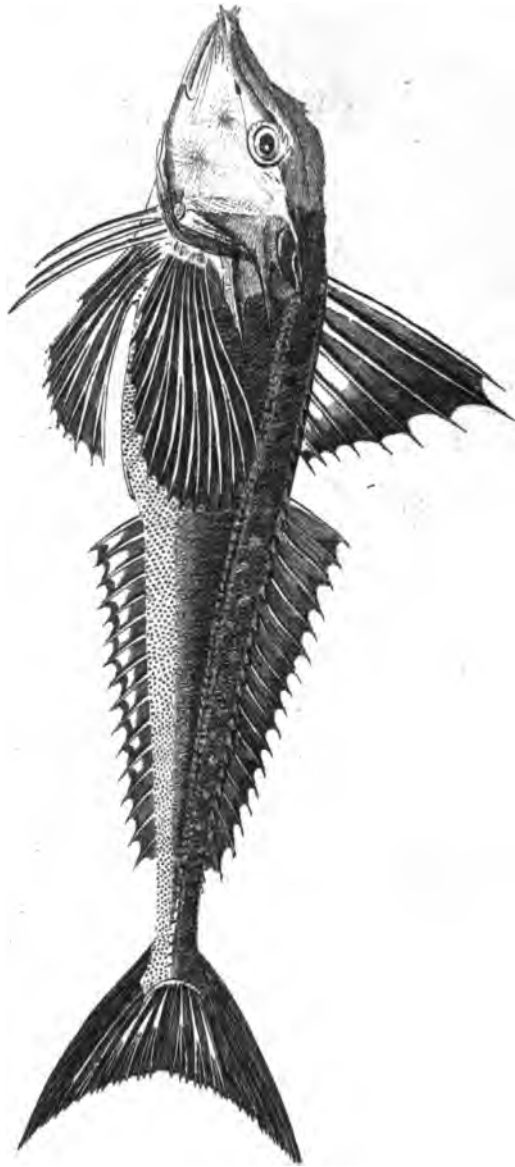
The second dorsal fin of nineteen soft rays: both fins lodged in a groove, rough on each side, but not serrated.

The pectoral fins do not extend as far as the anal fins, are transparent, and supported by ten rays, bifurcated from their middle: the three beards at their base as usual.

The

H. LIV.

GREY GURNARD.



NO 187

CLASS IV.

RED GURNARD.

243

The ventral fins had six rays, the first spiny, and the shortest of all.

The anal fin nineteen, each soft.

The tail bifurcated.

The lateral line very prominent, strongly ferrated, and of a silvery color.

The back, tail, and a small space beneath the side line, were of a deep grey, covered with small scales, and in parts spotted with white and yellow; the belly silvery.

These fish are usually taken with the hook in deep water, bite eagerly even at a red rag; and sometimes are fond of sporting near the surface. They are often found of the length of two feet and a half.

Κόκκυς? *Arist. Hist. an. lib. IV. c.*

9. *Oppian Halicut. I. 97.*

Κόκκυς ἐρυθρός. *Athenæus lib. VII. 369.*

Pesce capone, Cocco, Organo. *Salvian. 191.*

Le Rouget. *Belon, 199.*

Cuculus. *Rondel. 287. Gesner pisc. 305.*

Smiedecknecht, Kurre-fische. *Schona-*

velde, 32.

Red Gurnard, or Rotchet. *Wil. Ictb.*

281. *Raii syn. pisc. 89.*

Trigla tota rubens, rostro parum bicorni, operculis branchiarum striatis.

Arted synon. 74.

Trigla cuculus. Tr. digitis ternis, linea laterali mutica. Lin. syst. 497.

138. RED.

THIS species agrees in its general appearance with the tub fish; but in these particulars differs.

The covers of the gills are radiated: the spines are longer and slenderer in those of the red gurnard. The nose armed on each side with two sharp spines.

The fins and body are of a fuller red: the scales are larger: head less and narrower: the pectoral fins are edged with purple, not with blue: are much shorter, for when extended they do not reach to the anal fin. The side line is strongly serrated: the top of the back less so than that of the tub fish. The tail red and almost even at the end.

139. PIPER. *Lupa?* *Arist. Hist. an. lib. IV. c. 9.* *Trigla rostro longo diacantho, naribus*
Lyra. Rondel. 298. Gesner pisc. 516. tubulosis. Arted. syn. 74.
The Piper. Wil. Lab. 282. Raii syn. Trigla Lyra. Tr. digitis ternis, nari-
pisc. 89. bus tubulosis. Lin. syst. 496.

THIS species is frequently taken on the western coasts of this kingdom, and esteemed an excellent fish. It is also found off *Anglesea*.

The weight of one which was communicated to us by Mr. *Pitfield**, was three pounds and an half; the thickest circumference thirteen inches, the least, which was next the tail, only three: the length near two feet.

The head was very large, and that part of the body next to it very thick: the nose divided into two broad plates, each terminated with three spines: on the inner corner of each eye is a strong spine: the bony plates of the head terminate on each side with another.

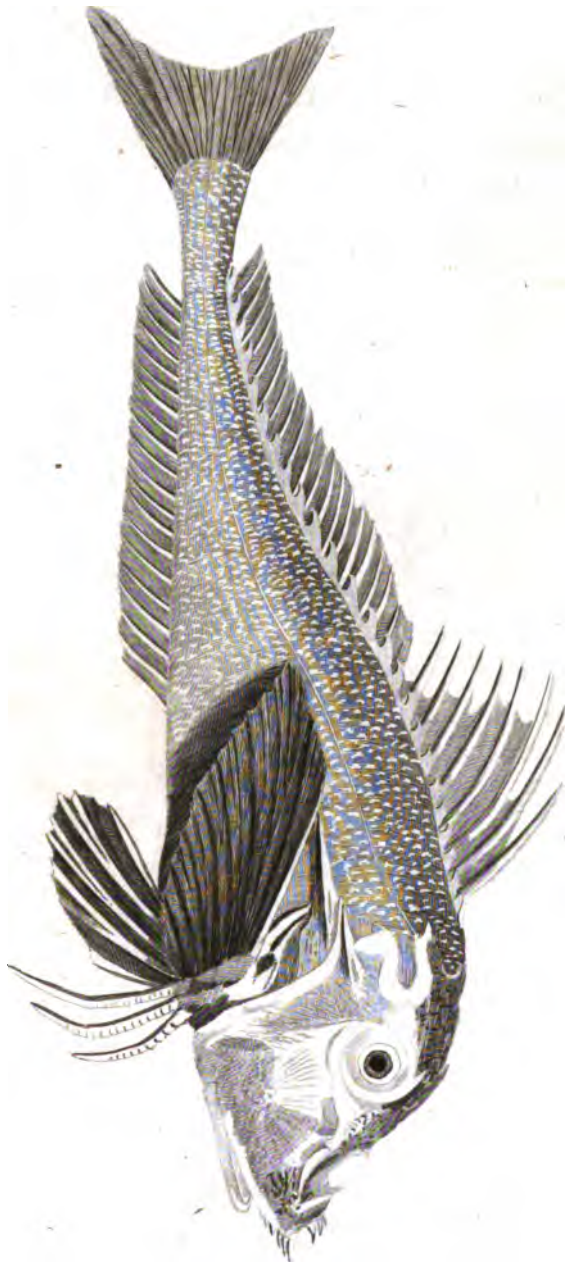
* We have been informed, that this fish is found at all times of the year on the western coasts, and is taken in nets.

The

P. IV.

PIPER.

1834



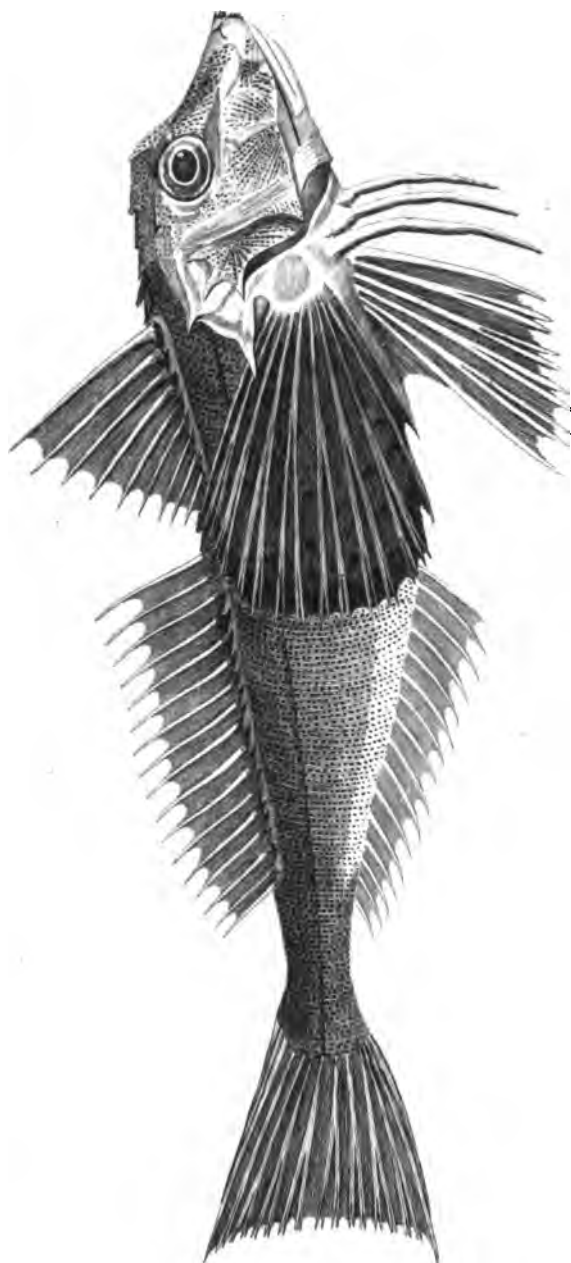
H. Müller

1834

Nº 140.

SAPPHIRINE GURNARD.

PL. LVI.



The covers of the gills are armed with one very sharp and strong spine, and are prettily striated: immediately over the pectoral fin is another spine very large and sharp pointed.

The nostrils very minute: the eyes large.

The lower jaw much shorter than the upper: the teeth in both very minute.

The first dorsal fin consisted of nine very strong sharp spines, the second of which is the longest; the second fin begins just behind the first, and consists of eighteen soft rays: the pectoral fins were long, and had twelve branched rays; the ventral fins six, very strong and thick: the anal eighteen, the first spiny: the tail small, in proportion to the size of the fish, and forked.

The back on each side the dorsal fin was armed with a set of strong and very large spines, pointing towards the tail like the teeth of a saw.

The scales were small, but very hard and rough: the lateral line bent a little at its beginning, that went straight to the tail, and was almost smooth.

Hirundo Aldrov. The Tub-fish, *Cer-* *Trigla hirundo.* Tr. digitis ternis, 140. SAPPHI-
sub. Wil. Ich. 280. *Raii syn. pisc.* linea laterali aculeata. *Lin. syst.* RINE.
 88. 497.
Trigla capite aculeato, appendicibus Knorrhane, Knoding, Knot, Smed.
utrinque tribus ad pinnas pectorales. *Faun. Suec.* No. 340.
Arted. synon. 73.

THIS species is of a more slender form than the preceding.

The pupil of the eye is green: on the inner corner of each
 are

STREAKED GURNARD. CLASS IV.

are two small spines. But what at once distinguishes this from the other species is the breadth and colors of the pectoral fins, which are very broad and long, of a pale green, most beautifully edged, and spotted with rich deep blue.

The dorsal fins are lodged between two rows of spines, of a serrated form: the back is of a greenish cast: the side line is rough: the sides are tinged with red; the belly white.

These fish are found on the coast of *Cornwall*. We have also taken them off *Anglesea*.

141. STREAK-
ED.

Cuculus lineatus, the Streaked Gurnard. *Rais. syn. pisc.* 165. fig. 11.

THIS is one of the *Cornish* fish communicated to Mr. *Petiver* by Mr. *Jago*. He says the head is large, and distinguished with stellated marks; the eyes great; the covering of the gills thorny; the mouth small, and without teeth. By the figure the nose seems not to be bifurcated. The pectoral fins large, and spotted, beneath them three filaments: the color of the body red: the belly white, marked with many streaks, pointing downwards, from the back.

Mr. *Jago* imagines it to be the *Mullis imberbis* of *Rondeletius*. *Wil. Ich.* 278.

SECT.



RED GURNARD.

279 138.



STREAKED GURNARD.

279 141.

S E C T. IV. A B D O M I N A L.

Eyes in the upper part of the head.
 Aperture to the gills closed below.
 Several beards on the end of the upper jaw.
 Body of almost an equal thickness.
 One dorsal fin.

XXXII.
 L O C H E.

La Loche franche. *Belon*, 321.

Cobitis barbatula. *Rondel. fluviat.*
 204.

Cobitis fluviatilis barbatula. *Gesner*
pisc. 404.

Smerling, Smerle. *Schonevelde*, 31.

Loche, or Groundling. *Wil. Ictb.* 265.

Raii syn. pisc. 124.

Cobitis tota glabra maculosa, corpore
 subtereti. *Arted. synon.* 2.

Cobitis Barbatula. C. cirris sex capite
 inermi compresso. *Lin. syst.* 499.
Gronov. Zooph. No. 202.

Gronling. Faun. Suec. No. 341.

Grundel. Kram. 396. *Wulff. Boruss.*
 No. 40.

142. BEARD-
 ED.

THE loche is found in several of our small rivers, keeping at the bottom on the gravel, and is on that account, in some places, called the *Groundling*: it is frequent on the stream near *Amesbury*, in *Wiltshire*, where the sportsmen, through frolick, swallow it down alive in a glass of white wine.

The largest we ever heard of was four inches and three quarters in length, but they seldom arrive to that size.

The mouth is small, placed beneath, and has no teeth: on the upper mandible are six small beards, one at each corner of the mouth, and four at the end of the nose.

The

The dorsal fin consists of eight rays; the pectoral of eleven; the ventral of seven; the anal of six: the tail is broad, and has sixteen or seventeen rays.

COLOR. The body is smooth and slippery, and almost of the same thickness: the color of the head, back, and sides, is in some white, in others of a dirty yellow, very elegantly marked with large spots, consisting of numberless minute black specks: the pectoral, dorsal, and caudal fins are also spotted: the belly and ventral fins of a pure white: the tail broad, and a little rounded.

Branchiostegous

PL. LVIII.

SALMON.

Nº 148.



LOCHE.

Nº 142.



M. Griffiths del.

Branchiostegous rays unequal in number.

Two dorsal fins; the second thick, and without rays,

XXXIII.
SALMON.

* With teeth.

- Salmo *Plinii Lib.* IX. c. 18. *Aufonius* Salmo rostro ultra inferiorem maxil- 143. SALMON.
Mosel. 97. lam sæpe prominente. *Arted. synon.*
Salmone. Saluvian. 100. 22.
Le Saulmon. Belon, 271. Salmo Salar. *Lin. syst.* 509. *Gronov.*
Salmo. Rondel. fluviat. 167. *Gesner* *Zooph.* No. 369.
pisc. 824. *Schoneveldt,* 64. *Lax. Faun. Suec.* No. 122.
Salmon. Wil. Ichth. 189. *Raii syn. pisc.* *Lachis. Wulff. Boruss.* No. 42.
63.

THE salmon is a northern fish, being unknown in the *Mediterranean* sea, and other warm climates: it is found in *France* in some of the rivers that empty themselves into the ocean*, and north as far as *Greenland*; they are also very common in *Newfoundland*, and the northern parts of *North America*. Salmons are taken in the rivers of *Kamtschatka*†, but whether they are of the same species with the *European* kind is not very certain.

They are in several countries a great article of commerce, being cured different ways, by salting, pickling, and drying: there are

* *Rondel. fluviat.* 167.

† *Hist. Kamtsch.* 143.

stationary fisheries in *Iceland*, *Norway**, and the *Baltic*, but we believe no where greater than those at *Colrairie* in *Ireland*; and in *Great Britain* at *Berwick*, and in some of the rivers of *Scotland*.

The salmon was known to the *Romans*, but not to the *Greeks*: *Pliny* speaks of it as a fish found in the rivers of *Aquitaine*: *Ausonius* enumerates it among those of the *Mosel*.

*Nec te puniceo rutilantem viscere Salmo
Transferem, late cujus vaga verbera cauda
Gurgite de medio summas referuntur in undas,
Oculus placido cum proditur aequore pulsus.
Tu loricato squamosus pectore, frontem
Lubricus, et dubie sacculus fercula cœna,
Tempora longarum fers incorrupta morarum,
Præsignis maculis capitis, cui prodiga nutat
Alvus, opimatoque fluxus abdomine ventor.*

Nor I thy scarlet belly will omit,
O Salmon, whose broad tail with whisking strokes
Bears thee up from the bottom of the stream
Quick to the surface; and the secret lash
Below, betrays thee in the placid deep.
Arm'd in thy flaky mail, thy glossy snout
Slippery escapes the fisher's fingers; else
Thou makest a feast for nicest judging palates:
And yet long uncorrupted thou remainest:
With spotted head remarked, and wavy spread,
Of paunch immense o'erflowing wide with fat.

ANONYMOUS.

* There was, about the year 1578, a pretty considerable salmon fishery at *Cole*, in *Russian Lapland*. *Hackluyt. voy.* I. 416.

The

The salmon is a fish that lives both in the salt and fresh waters, quitting the sea at certain seasons for the sake of depositing its spawn in security, in the gravelly beds of rivers remote from their mouths. There are scarce any difficulties but what they will overcome, in order to arrive at places fit for their purpose: they will ascend rivers hundreds of miles, force themselves against the most rapid streams, and spring with amazing agility over cataracts of several feet in height. Salmon are frequently taken in the *Rhine* as high up as *Basil*; they gain the sources of the *Lapland* rivers* in spite of their torrent-like currents, and surpass the perpendicular falls of *Leixlip* †, *Kennerth* ‡, and *Pont aberglaflyn* §; these last feats we have been witness to, and seen the efforts of scores of fish, some of which succeeded, others miscarried during the time of our stay.

ASCENDS
RIVERS.

SALMON
LEAPS.

It may here be proper to contradict the vulgar error of their taking their tail in their mouth when they attempt to leap; such as we saw, sprung up quite straight, and with a strong tremulous motion.

Other particulars relating to the natural history of this fish, we shall relate in our accounts of the fisheries, either from our own observations, or from such as have been communicated to us from different places: the fullest we have been favoured with, is from the late Mr. *Potts*, of *Berwick*, to whom the public is indebted for the following very curious history of the salmon fishery on the *Tweed*.

* *Scheff. Lap.* 139.

† Near *Dublin*.

‡ On the *Tivy* in *South Wales*, which *Michael Drayton* celebrates in his *Polyolbion* on this account.

§ Amidst *Snowdon* hills, a wild scene in the style of *Salvator Rosa*.

SPAWNING. At the latter end of the year, or in the month of *November*, the salmon begin to press up the rivers as far as they can reach, in order to spawn; when that time approaches they search for a place fit for the purpose: the male and female unite in forming a proper receptacle for it in the sand or gravel, about the depth of eighteen inches; in this the female deposits her spawn, the male his milt, which they cover carefully, as it is said, with their tails, for after spawning they are observed to have no skin on that part.

The spawn lies buried till spring, if not disturbed by violent floods; but the salmon hasten to sea as soon as they are able, to purify and cleanse themselves, and to recover their strength; for after spawning they become very poor and lean, and then are called *Kipper*.

When the salmon first enter the fresh water, they are observed to have abundance of insects adhering to them, especially above the gills: these are the *Lernæ Salmonæ* of *Linneus*, and are signs that the fish are in high season. These animals die and drop off, soon after the salmon have left the sea.

About the latter end of *March* the spawn begins to exclude the young, which gradually increase to the length of four or five inches, and are then termed *Smelts* or *Smouts*: about the beginning of *May* the river is full of them; it seems to be all alive; there is no having an idea of the numbers without seeing them; but a seasonable flood then hurries them all to the sea, scarce any or very few being left in the river.

About the middle of *June* the earliest of the fry begin to drop, as it were, into the river again from the sea, at that time about twelve, fourteen, or sixteen inches, and by a gradual progress, increase in number and size till about the end of *July*, which is at
Berwick

Berwick termed the height of *Gilse* time, the name given to the fish at that age: the end of *July*, or beginning of *August* they lessen in number, but increase in size, some being six, seven, eight, or nine pounds in weight; this appears to be a surprising quick growth, yet we have received from a gentleman at *Warrington*, an instance still more so: a kipper salmon weighing 7 lb. three quarters, taken on the 7th of *February*, being marked with a scissars, on the back, fin, and tail, and turned into the river, was again taken on the 17th of *March* following, and then was found to weigh 17 lb. and a half.

QUICK
GROWTH.

All fishermen agree, that they never find any food in the stomach of this fish. It is likely they may neglect their food entirely during the time of spawning, as *sea lions* and *sea bears* are known to do for months together during their breeding season: and it may be observed, that like those animals, the salmons return to the sea lank and lean, and come from the salt water in good condition. It is evident that at times their food is both fish and worms, for the angler uses both with good success; as well as a large, gaudy, artificial fly, which probably the fish mistakes for a *gay libellula* or dragon fly.

FOOD
UNCERTAIN.

The capture in the *Tweed*, about the month of *July*, is prodigious; in a good fishery, often a boat load, and sometimes near two, are taken in a tide: some few years ago there were above seven hundred fish taken at one haul, but from fifty to a hundred is very frequent: the coopers in *Berwick* then begin to salt both *Salmon* and *Gilse* in pipes, and other large vessels, and afterwards barrel* them to send abroad, having then far more than the *London* markets can take off their hands.

CAPTURE.

* The salmon barrel holds above forty-two gallons, wine measure.

Most

Most of the salmon taken before *April*, or to the setting in of the warm weather, is sent fresh to *London* in baskets, unless now and then the vessel is disappointed by contrary winds, of sailing immediately; in that case the fish is brought ashore again to the coopers offices, and boiled, pickled, and kitted, and sent to the *London* markets by the same ship, and fresh salmon put in the baskets in lieu of the stale ones. At the beginning of the season, when a ship

PRICE.

is on the point of sailing, a fresh clean salmon will sell from a shilling to eighteen pence a pound, and most of the time that this part of the trade is carried on, the prices are from five to nine shillings per stone*, the value rising and falling according to the plenty of fish, or the prospect of a fair or foul wind. Some fish are sent in this manner to *London* the latter end of *September*, when the weather grows cool, but then the fish are full of large roes, grow very thin bellied, and are not esteemed either palatable or wholesome.

SEASON.

The price of fresh fish in the month of *July*, when they are most plentiful, has been known to be as low as 8*d.* per stone, but last year never less than 16*d.* and from that to 2*s.* 6*d.*

The season for fishing in the *Tweed* begins *November* 30th, but the fishermen work very little till after *Christmas*; it ends on *Michaelmas-Day*; yet the corporation of *Berwick* (who are conservators of the river) indulge the fishermen with a fortnight past that time, on account of the change of the style.

There are on the river forty-one considerable fisheries extending upwards, about fourteen miles from the mouth (the others above

* A stone of salmon weighs 18lb. 10 oz. and half, or in other terms, four stones, or fifty-six pounds avoirdupoise, is only three stones, or forty-two pounds, fish weight at *Berwick*.

being

being of no great value) which are rented for near 5400*l.* per annum. The expence attending the servants' wages, nets, boats, &c. amount to 5000*l.* more, which together makes up the sum 10400*l.* Now in consequence the produce must defray all, and no less than twenty times that sum of fish will effect it, so that 208000 salmon must be caught there one year with another.

There is a misfortune attending the river *Tweed*, which is worthy a parliamentary remedy; for there is no law for preserving the fish in it during the fence months, as there is in the case of many other *British* rivers. This being the boundary between the two kingdoms, part of it belongs to the city of *Berwick*, and the whole north side (beginning about two miles from the town) is entirely *Scotch* property. From some disagreement between the parties they will not unite for the preservation of the fish, so that in some fisheries on the north side they continue killing salmon the whole winter, when the death of one fish is the destruction of thousands*.

The legislature began very early to pay attention to this important article: by the 13th *Edward* I. there is an act which prohibits the capture of the salmon from the Nativity of our Lady to *St. Martin's* Day, in the waters of the *Humber*, *Ouse*, *Trent*, *Don*, *Arre*, *Derwent*, *Wharfe*, *Nidd*, *Tore*, *Swale*, and *Tees*; and other monarchs in after-times, provided in like manner for the security of the fish in other rivers.

Scotland possesses great numbers of fine fisheries on both sides of SCOTLAND: that kingdom. The *Scotch* in early times had most severe laws against the killing of this fish; for the third offence was made capital, by a law of *James* IV. Before that, the offender had power.

* I think that this grievance is now removed.

to redeem his life *. They were thought in the time of *Henry VI.* a present worthy of a crowned head, for in that reign the Queen of *Scotland* sent to the Dutchess of *Clarence*, ten casks of salted salmon; which *Henry* directed to pass duty-free. The salmon are cured in the same manner as at *Berwick*, and a great quantity is sent to *London* in the spring; but after that time the adventurers begin to barrel and export them to foreign countries: but we believe that commerce is far less lucrative than it was in former times, partly owing to the great encrease of the *Newfoundland* fishery, and partly to the general relaxation of the discipline of abstinence in the *Romish* church.

IRELAND.

Ireland (particularly the north) abounds with this fish: the most considerable fishery is at *Cranna*, on the river *Ban*, about a mile and an half from *Coleraine*. When I made the tour of that hospitable kingdom in 1754, it was rented by a neighboring gentleman for 620*l.* a year, who assured me that the tenant, his predecessor, gave 1600*l.* per ann. and was a much greater gainer by the bargain for the reasons before-mentioned, and on account of the number of poachers who destroy the fish in the fence months.

The mouth of this river faces the north, and is finely situated to receive the fish that roam along the coast, in search of an inlet into some fresh water, as they do all along that end of the kingdom which opposes itself the northern ocean. We have seen near *Balliscastle*, nets placed in the sea at the foot of the promontories that jut into it, which the salmon strike into as they are wandering close to shore, and numbers are taken by that method.

* *Regiam Majestatem. Stat. Rob. III. c. 7. Skene's Acts. James IV. Parl. VI. c. 72.*

In the *Baw* they fish with nets eighteen score yards long, and are continually drawing night and day the whole season, which we think lasts about four months, two sets of sixteen men each alternately relieving one another. The best drawing is when the tide is coming in: we were told that at a single draught there were once eight hundred and forty fish taken.

A few miles higher up the river is a ware, where a considerable number of fish that escape the nets are taken. We were lately informed, that in the year 1760 about 320 tons were taken in the *Cranna* fishery.

The salmon are cured in this manner: they are first split, and rubbed with fine salt; and after lying in pickle in great tubs, or reservoirs, for six weeks, are packed up with layers of coarse brown *Spanish* salt in casks, six of which make a ton. These are exported to *Leghorn* and *Venice* at the price of twelve or thirteen pounds per ton, but formerly from sixteen to twenty-four pounds each.

The salmon is a fish so generally known, that a very brief description will serve. The largest we ever heard of weighed seventy-four pounds. The color of the back and sides are grey, sometimes spotted with black, sometimes plain: the covers of the gills are subject to the same variety: the belly silvery: the nose sharp pointed: the end of the under jaw in the males often turns up in form of a hook; sometimes this curvature is very considerable: it is said that they lose this hook when they return to the sea.

DESCRIP.

The teeth are lodged in the jaws and on the tongue, and are slender, but very sharp.

The tail is a little forked.

144. GREY. The Grey, i. e. cinereus seu Griseus. *Gralax. Faun. Suec.* No. 346.
Wil. Itb. 193. *Raii syn. pisc.* 63. Lachs-forellen mit Schwartz-grauen
Salmo maculis cinereis, caudæ extremo flecken oder punktchens. *Wulf.*
æquali. Arted. synon. 23. *Berufs.* No. 43.
Salmo eriox. Lin. syst. 509.

WE are uncertain whether this is not a meer variety of the salmon; but on the authority of Mr. Ray, we describe them separate. He says it is a very strong fish, that it does not ascend the fresh waters till *August*, when it rushes up with great violence, that it is rarely taken, and not much known.

The inhabitants of the *North of England* and of *South Wales* seem extremely well assured, that it is a distinct species from the salmon. They appear in the *Esk* in *Cumberland* from *July* to *September*, and are then in spawn. The lower jaw grows hooked, when they are out of season. I was informed they never exceeded thirteen pounds in weight*.

The head is larger in proportion than that of the salmon. In the jaws are four rows of teeth: and on the tongue are eight teeth. The back and sides, above the lateral line, of a deep grey, spotted with number of purplish spots. The belly silvery. The tail even at the end.

THIS we believe to be the *Sewin*, or *Shewin* of *South Wales*. The description above, was communicated to us by Doctor *Roberts* of *Herefordshire*.

* I met with a fish (I suspected to be a Grey) taken in the sea near *Conway*. It weighed twenty-two pounds.

Trutta

- Trutta taurina*, apud nos in *Northumbria* a Bull-trout. *Charlton ex. pisc.* 36.
Trutta Salmonata, the Salmon-trout, Bull-trout, or Scurf. *Raii syn. pisc.* 63. *Wil. Ich.* 193.
- Salmo latus*, maculis rubris nigrisque, cauda æquali. *Arted. synon.* 24.
Salmo trutta. S. ocellis nigris, iridibus brunneis, pinna pectorali punctis sex. *Lin. syst.* 509. *Gronov. Zooph.* No. 367. *Orlax, Borting. Faun. Suec.* No. 347.
145. SEA.

THIS species migrates like the salmon up several of our rivers ; spawns, and returns to the sea. That, which I describe, was taken in the *Tweed* below *Berwick*, *June 1769*.

The shape was more thick than the common trout. The weight three pounds two ounces. The *irides* silvery : the head thick, smooth, and dusky, with a gloss of blue and green : the back of the same color, which grows fainter towards the side line. The back is plain, but the sides as far as the lateral line marked with large, distinct, irregularly shaped spots of black : the lateral line strait : the sides beneath the line, and the belly are white. Tail broad, and even at the end.

The dorsal fin had twelve rays : the pectoral fourteen : the ventral nine : the anal ten.

The flesh when boiled is of a pale red, but well flavored.

Mr. *Willughby's* account of the Salmon, Bull, or Scurf Trout obscure. Whether the same with this ?

146. TROUT. Salar. *Aufonus Mysel.* 88.
 Salar et varius, Trotta. *Salomon.* 96.
 La Truite. *Brehu,* 274.
 Trutta Ruviatilis. *Rendel. Juvier.* 169.
Gesner pisc. 1002.
 Foren, Forellen. *Schnevalde,* 77.
- A Trout. *Will. Rob.* 199. *Rail syn. pisc.* 65.
 S. maculis rubris, macula interiori longiore. *Arted. synon.* 23.
 Salmo Fario. *Lin. f.* 509.
 Laxoring, Ferell, Stenka. *Fenn. Sac.*
 No. 348.

IT is matter of surprize that this common fish has escaped the notice of all the antients, except *Aufonius*: it is also singular, that so delicate a species should be neglected at a time when the folly of the table was at its height; and that the epicures should overlook a fish that is found in such quantities in the lakes of their neighborhood, when they ransacked the universe for dainties. The milts of *Muræna* were brought from one place; the livers of *Scari* from another*; and *Oysters* even from so remote a spot as our *Sandwich*†: but there was, and is a fashion in the article of good living. The *Romans* seem to have despised the trout, the piper, and the doree; and we believe Mr. *Quin* himself would have resigned the rich paps of a pregnant sow‡, the heels of camels§, and the tongues of *Flamingos*||, though dressed by *Heliogabalus's* cooks, for a good jowl of salmon with lobster sauce.

* *Suetonius, vitæ Vitellii.*

† *Juvenal Sat. IV. 141.*

‡ *Martial, Lib. XIII. Epig. 44.*

§ *Lamprid. vit. Heliogab.*

|| *Martial, Lib. XII. Epig. 71.*

When

PLATE.



SALMON T.

PLATE 148.



TROUT.

PLATE 146.

When *Ausonius* speaks of this fish, he makes no euloge on its goodness, but celebrates it only for its beauty.

Purpureisq; SALAR stellatus Tergore guttis.

With purple spots the *Salar*'s back is stained.

These marks point out the species he intended: what he meant by his *Fario* is not so easy to determine: whether any species of trout, of a size between the *salar* and the salmon; or whether the salmon itself, at a certain age, is not very evident.

Taque inter geminas species, neutrumque et utrumque,

Qui nec dum SALMO, nec SALAR ambiguusq;.

Amborum medio FARIO intercepte sub ævo.

Salmon or *salar*, I'll pronounce thee neither;

A doubtful kind, that may be none, or either,

Fario, when stopt in middle growth.

In fact the colors of the trout, and its spots, vary greatly in different waters, and in different seasons; yet each may be reduced to one species. In *Elyndivi*, a lake in *South Wales*, are trouts called *Coch y dail*, marked with red and black spots as big as six-pences; others unspotted, and of a reddish hue, that sometimes weigh near ten pounds, but are bad tasted.

In *Lough Neagh* in *Ireland*, are trouts called there *Buddaghs*, which I was told sometimes weighed thirty pounds, but it was not my fortune to see any during my stay in the neighborhood of that vast water.

Trouts

Trouts (probably of the same species) are also taken in *Hulsewater*, a lake in *Cumberland*, of a much superior size to those of *Lough Neagh*. These are supposed to be the same with the trout of the lake of *Geneva*, a fish I have eaten more than once, and think but a very indifferent one.

CROOKED
TROUTS.

In the river *Eynion*, not far from *Machyntletb*, in *Merionethshire*, and in one of the *Snowdon* lakes, are found a variety of trout, which are naturally deformed, having a strange crookedness near the tail, resembling that of the perch before described. We dwell the less on these monstrous productions, as our friend the Hon. *Daines Barrington*, has already given an account of them in an ingenious dissertation on some of the *Cambrian* fish, published in the *Philosophical Transactions* of the year 1767.

GILLAROO
TROUT*.

The stomachs of the common trouts are uncommonly thick, and muscular. They feed on the shell-fish of lakes and rivers, as well as on small fish. They likewise take into their stomachs gravel, or small stones, to assist in comminuting the testaceous parts of their food. The trouts of certain lakes in *Ireland*, such as those of the province of *Galway*, and some others, are remarkable for the great thickness of their stomachs, which, from some slight resemblance to the organs of digestion in birds, have been called gizzards: the *Irish* name the species that has them, *Gillaroo* trouts. These stomachs are sometimes served up to table, under the former appellation. It does not appear to me, that the extraordinary strength of stomach in the *Irish* fish, should give any suspicion, that it is a distinct species: the nature of the waters might increase the thickness; or the superior quantity of shell-fish, which may more fre-

NAME.

* *Philosopb. Transact.* Vol LXIV. p. 116. 310.

quently

quently call for the use of its comminuting powers than those of our trouts, might occasion this difference. I had opportunity of comparing the stomach of a great *Gillaroo* trout, with a large one from the *Uxbridge* river. The last, if I recollect, was smaller, and out of season; and its stomach (notwithstanding it was very thick) was much inferior in strength to that of the former: but on the whole, there was not the least specific difference between the two subjects.

Trouts are most voracious fish, and afford excellent diversion to the angler: the passion for the sport of angling is so great in the neighborhood of *London*, that the liberty of fishing in some of the streams in the adjacent counties, is purchased at the rate of ten pounds per annum.

These fish shift their quarters to spawn, and, like salmon, make up towards the heads of rivers to deposit their roes. The under jaw of the trout is subject, at certain times, to the same curvature as that of the salmon.

A trout taken in *Llynallet*, in *Denbighshire*, which is famous for an excellent kind, measured seventeen inches, its depth three and three quarters, its weight one pound ten ounces: the head thick; the nose rather sharp: the upper jaw a little longer than the lower; both jaws, as well as the head, were of a pale brown, blotched with black: the teeth sharp and strong, disposed in the jaws, roof of the mouth and tongue, as is the case with the whole genus, except the *Gwyniad*, which is toothless, and the *Grayling*, which has none on its tongue.

DESCRIP.

The back was dusky; the sides tinged with a purplish bloom, marked with deep purple spots, mixed with black, above and below the side line which was strait: the belly white.

The

The first dorsal fin was spotted; the spurious fin brown, tipped with red; the pectoral, ventral, and anal fins, of a pale brown; the edges of the anal fin white: the tail very little forked when extended.

147. WHITE.

THIS species migrates out of the sea into the river *Esk* in Cumberland from *July* to *September*, and is called from its color the *Whiting*. When dressed, their flesh is red, and most delicious eating. They have, on their first appearance from the salt water, the *lernea salmonea*, or salmon louse, adhering to them. They have both melt and spawn; but no fry has as yet been observed. This is the fish called by the *Scots*, *Phinocs*.

They never exceed a foot in length. The upper jaw is a little longer than the lower: in the first are two rows of teeth; in the last, one: on the tongue are six teeth.

The back is strait: the whole body of an elegant form: the lateral line is strait; color, between that and the top of the back, dusky and silvery intermixed; beneath the line of an exquisite silvery whiteness: first dorsal fin spotted with black: tail black, and much forked.

The first dorsal fin has eleven rays; pectoral, thirteen; ventral, nine; anal, nine.

Le Tacon? *Belon*, 275.

Salmulus, *Herefordiæ* Samlet dictus.

Wil. Ictb. 192.

Salmulus, the Samlet *Herefordiensibus*,

Branlin et Fingerin *Eboracensibus*.

Raii syn. pisc. 63.

Salmoneta, a Branlin. *Ray's Letters*,
199.

148. SAM-
LET.

THE samlet is the left of the trout kind, is frequent in the *Wye*, in the upper part of the *Severn*, and the rivers that run into it, in the north of *England*, and in *Wales*. It is by several imagined to be the fry of the salmon; but our reasons for dissenting from that opinion are these:

First, It is well known that the salmon fry never continue in fresh water the whole year; but as numerous as they appear on their first escape from the spawn, all vanish on the first vernal flood that happens, which sweeps them into the sea, and leaves scarce one behind.

Secondly, The growth of the salmon fry is so quick and so considerable, as suddenly to exceed the bulk of the largest samlet: for example, the fry that have quitted the fresh water in the spring, not larger than gudgeons, return into it again a foot or more in length.

Thirdly, The salmon attain a considerable bulk before they begin to breed: the samlets, on the contrary, are found male and female*, (distinguished by the milt and roe) of their common size.

Fourthly, They are found in the fresh waters in all times of the

* It has been vulgarly imagined, that there were no other than males of this species.

year, and even at seasons when the salmon fry have gained a considerable size. It is well known, that near *Sbrewsbury* (where they are called *Samsons*) they are found in such quantities in the month of *September*, that a skilful angler, in a coracle, will take with a fly from twelve to sixteen dozen in a day.

They spawn in *November* and *December*, at which time those of the *Severn* push up towards the head of that fair river, quitting the lesser brooks, and return into them again when they have done.

They have a general resemblance to the trout, therefore must be described comparatively.

First, The head is proportionably narrower, and the mouth less than that of the trout.

Secondly, Their body is deeper.

Thirdly, They seldom exceed six or seven inches in length: at most, eight and a half.

Fourthly, The pectoral fins have generally but one large black spot, though sometimes a single small one attends it; whereas the pectoral fins of the trout are more numerously marked.

Fifthly, The spurious or fat fin on the back is never tipped with red; nor is the edge of the anal fin white.

Sixthly, The spots on the body are fewer, and not so bright.

It is also marked from the back to the sides with six or seven large bluish bars; but this is not a certain character, as the same is sometimes found in young trouts.

Seventhly, The tail of the samlet is much more forked than that of the trout.

These fish are very frequent in the rivers of *Scotland*, where they are called *Pars*. They are also common in the *Wye*, where they are known by the name of *Skirlings*, or *Lasprings*.

L'Ombre,

PL. IX.

CHARR.

NP 149.



G. Wilkinson del.

Mazell Sculp

- L'Ombre, ou Humble. *Belon*, 281. rubris, maxilla inferiore longiore. *Ar-* 149. CHARR.
 Umbla seu Humble *Belonii Gefner pisc.* ted. *syn.* 25.
 1005. Salmo alpinus. *Lin. Syst.* 510. *Gronov.*
Zooph. No. 372.
 Umbla minor. *Gefner pisc.* 1013. Roding, *Lapponibus Raud. Faun. Suec.*
 Torgoch *Wallis. Westmorlandis Red* No. 124.
 Charre. *Lacus Winander mere. Wil.* Charr-fish. *Phil. Trans.* 1755. 210.
Ichth. 196. *Raii syn. pisc.* 65. Salmo vix pedalis, pinnis ventralibus

THE charr is an inhabitant of the lakes of the north, and of those of the mountainous parts of *Europe*. It affects clear and pure waters, and is very rarely known to wander into running streams, except into such whose bottom is similar to the neighboring lake.

It is found in vast abundance in the cold lakes on the summits of the *Lapland Alps*, and is almost the only fish that is met with in any plenty in those regions; where it would be wonderful how they subsisted, had not Providence supplied them with innumerable larvæ of the *Gnat* kind*: these are food to the fish, who in their turn

* A pupil of *Linnaeus* remarks in the fourth volume of the *Amer. Acad.* p. 156, that the same insects which are such a pest to the rein deer, afford sustenance to the fish of the vast lakes and rivers of *Lapland*. But at the same time that we wonder at *Linnaeus*'s inattention to the food of the birds and fish of that country, which abound even to a noxious degree, we must, in justice to that Gentleman, acknowledge an oversight of our own in the second volume of the *British Zoology*, p. 522, edition the second, where we give the *Lapland* waters only one species of water plant; for on a more careful review of that elaborate performance, the *Flora Lapponica*, we discover three other species, viz. *Scirpus*, No. 18, *Alopecurus*,

turn are a support to the migratory *Laplanders* in their summer voyages to the distant lakes.

In such excursions those vacant people find a luxurious and ready repast in these fish, which they dress and eat without the addition* of sauces; for exercise and temperance render useless the inventions of epicurism.

There are but few lakes in our island that produce this fish, and even those not in any abundance. It is found in *Winander Mere* in *Westmorland*; in *Llyn Quellyn*, near the foot of *Snowdon*; and before the discovery of the copper-mines, in those of *Llynberis*, but the mineral streams have entirely destroyed the fish in the last lakes†. Whether the waters in *Ireland* afford the charr, we are uncertain, but imagine not, except it has been overlooked by their writers on the natural history of that kingdom. In *Scotland* it is found in *Loch Inch*, and other neighboring lakes, and is said to go into the *Spey* to spawn.

The largest and most beautiful we ever received were taken in *Winander Mere*, and were communicated to us by the Rev. Mr. *Farrish* of *Carlisle*, with an account of their natural history. He favored me with five specimens, two under the name of the *Cafe Charr*, male and female; another he called the *Gelt Charr*, i. e. a charr which had not spawned the preceding season, and on that account is reckoned to be in the greatest perfection. The two others

No. 38, Ranunculus, No. 234; but those so thinly scattered over the *Lapland* lakes, as still to vindicate our assertion, as to the scarceness of plants in the waters of alpine countries.

* *Arud. Sp. pisc. 52.*

† They are also found in certain lakes in *Merionethshire*.

were

were inscribed, the *Red Charr*, the *Silver or Gilt Charr*, the *Carpio Lacus* BENACI, *Raii syn. pisc.* 66, which last are in *Westmorland* distinguished by the epithet *red*, by reason of the flesh assuming a higher color than the other when dressed.

On the closest examination, we could not discover any specific differences in these specimens, therefore must describe them as the same fish, subject only to a slight variation in their form, hereafter to be noted. But there is in another respect an essential difference, we mean in their œconomy, which is in all beings invariable; the particulars we shall deliver in the very words of our obliging informant.

VARIETIES.

The *Umbla minor*, or case charr, spawns about *Michaelmas*, and chiefly in the river *Brathby*, which uniting with another called the *Rowtbay*, about a quarter of a mile above the lake, they both fall into it together. The *Brathby* has a black rocky bottom; the bottom of the *Rowtbay* is a bright sand, and into this the charr are never observed to enter. Some of them however spawn in the lake, but always in such parts of it which are stony, and resemble the channel of the *Brathby*. They are supposed to be in the highest perfection about *May*, and continue so all the summer, yet are rarely caught after *April*. When they are spawning in the river they will take a bait, but at no other time, being commonly taken, as well as the other species, in what they call *breast nets*, which are in length about twenty-four fathoms, and about five, where broadest.

SPAWNING
OF THE CASE
CHARR.

The season which the other species spawns in is from the beginning of *January* to the end of *March*. They are never known to ascend the rivers, but always in those parts of the lake which are springy, where the bottom is smooth and sandy, and the water warmest. The fishermen judge of this warmth, by observing that
the

GILT
CHARR.

the water seldom freezes in the places where they spawn, except in intense frosts, and then the ice is thinner than in other parts of the lake. They are taken in greatest plenty from the end of *September* to the end of *November*: at other times they are hardly to be met with. This species is much more esteemed for the table than the other, and is very delicate when potted.

We must observe, that this account of the spawning season of the *Westmorland* charrs, agrees very nearly with that of those of *Wales*, the last appearing about a month later, keep moving from side to side of the pool, and then retire into the deep water, where they are sometimes but rarely taken.

This remarkable circumstance of the different season of spawning in fish, apparently the same (for the red charr of *Winander*, is certainly not the *Carpio Lacus BENACI*) puzzles us greatly, and makes us wish that the curious, who border on that lake, would pay farther attention to the natural history of these fish, and favor us with some further lights on the subject.

We shall now describe the varieties by the names ascribed to them in the north.

RED CHARR.

The length of the red charr to the division in its tail, was twelve inches; its biggest circumference almost seven. The first dorsal fin five inches and three quarters from the tip of its nose, and consisted of twelve branched rays: the first of which was short, the fifth the longest: the fat fin was very small.

Each of the five fish had double nostrils, and small teeth in the jaws, roof of the mouth, and on the tongue.

The head, back, dorsal fin, and tail of each, was of a dusky blue; the sides rather paler, marked with numbers of bright red spots: the bellies of the *Red Charr* were of a full and rich red; those

those of the *Cafe Charr* rather paler; from this particular the *Welch* call these fish *Torgoch*, or red belly.

The first rays of the anal and ventral fins of each, were of a pure white; the rest of each fin on the lower part of the body, tinged with red.

The lateral line strait, dividing the fish in two equal parts, or nearly so.

The jaws of the *Cafe Charr* are perfectly even; on the contrary, those the *Red Charr* were unequal, the upper jaw being the broadest, and the teeth hung over the lower, as might be perceived on passing the finger over them.

The branchiostegous rays were, on different sides of the same fish, unequal in number, viz. 12,--11, 11,--10, 10--9, except in one, where they were 11,--11.

The *Gelt*, or *Barren Charr*, was rather more slender than the others, as being without spawn. The back of a glossy dusky blue: the sides silvery, mixed with blue, spotted with pale red: the sides of the belly were of a pale red, the bottom white.

GELT
CHARR.

The tails of each bifurcated.

The charrs we have seen, brought from *Snowdon* lakes, were rather smaller than those of *Westmorland*, their colors paler. The supposed males very much resemble the *Gelt Charr*; but that is not a certain distinction of sex, for the Rev. Mr. *Farrington**, has told me that the fishermen do not make that distinction.

* Who favored the Royal Society with a paper on the *Welch* charr. *Vide Phil. Transf.* 1755.

850. GRAYLING. *Θυμαλλος* *Ælian. de an. lib. xiv. c. 22.*
Umbra Aufonii Mosella. 90.
Thymalus, Thymus. Salvia. 81. Berlin, 276.
Thymus, Umbra fluviatilis. Rondel. flav. 187, 172. Gesner pisc. 132.
 A Grayling, or Umber. *Wil. Ictb.*
187. *Raii syn. pisc. 62. Coregonus*
maxilla superiore longiore, pinna dor-
si officulorum viginti trium. Arisd.
synon. 20.
Salmo Thymallus. Lin. syst. 512. Gronov. Zooph. No. 375. Asch. Kram. 390.

THE grayling haunts clear and rapid streams, and particularly such that flow through mountainous countries. It is found in the rivers of *Derbyshire*; in some of those of the north; in the *Tame* near *Ludlow*; in the *Lag*, and other streams near *Leominster*; and in the river near *Christchurch, Hampshire*. It is also very common in *Lapland*; the inhabitants make use of the guts of this fish instead of rennet, to make the cheese which they get from the milk of the rein deer*.

It is a voracious fish, rises freely to the fly, and will very eagerly take a bait. It is a very swift swimmer, and disappears like the transient passage of a shadow, from whence we believe is derived the name of *Umbra*.

Effugiensque oculos celeri levis UMBRA natatu †.

The *Umbra* swift escapes the quickest eye.

Thymalus and *Thymus*, are names bestowed on it on account of the imaginary scent, compared by some to that of thyme; but we never could perceive any particular smell.

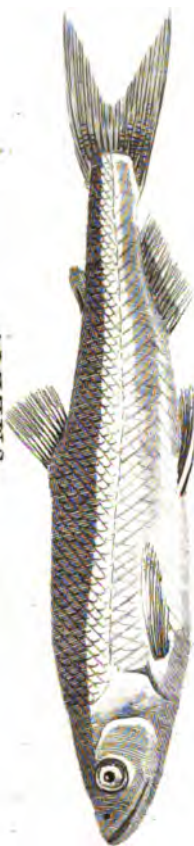
* *Flora Lap. 109. Aman Acad. IV. 159.* † *Ausonii Mosel. 90.*

It

GRAYLING.



SMELT.



It is a fish of an elegant form; less deep than that of a trout: the largest we ever heard of was taken near *Ludlow*, which was above half a yard long, and weighed four pounds six ounces, but this was a very rare instance. DESCRIP.

The irides are silvery, tinged with yellow: the teeth very minute, seated in the jaws and the roof of the mouth, but none on the tongue: the head is dusky: the covers of the gills of a glossy green: the back and sides of a fine silvery grey, but when the fish is just taken, varied slightly with blue and gold: the side-line is strait.

The scales large, and the lower edges dusky, forming strait rows from head to tail.

The first dorsal fin has twenty-one rays; the three or four first are the shortest, the others almost of equal lengths; this fin is spotted, all the others are plain.

The tail is much forked.

Eperlan de mer, Belon, 282.

Eperlanus. Rondel. fluviat. 196. Ges-
ner pisc. 362.

Spirincus et Stincus. Gesner Paralip.
29.

A Spyrling a Sprote. Turner epist. ad.
Gesner.

Stindt, et Stinckfisch. Schoneveldt, 70.

A Smelt. Wil. Ictb. 202. Raii syn. 151. SMELT,
pisc. 66.

Olmerus radiis pinnæ ani septendecim.
Arted. synon. 21.

Salmo eperlanus. S. capite diaphano,
radiis pinnæ ani septendecim. Lin.

syn. 511. Gronov. Zooph. No.

Nors, Blom. Faun. suec. No. 350.

THE smelt inhabits the seas of the northern parts of *Europe*, and we believe never is found as far south as the *Mediterranean*: the *Seine* is one of the *French* rivers which receive it, but

whether it is found south of that, we have not at present authority to say. If we can depend on the observations of navigators, who generally have too much to think of to attend to the *minutiae* of natural history, these fish are taken in the straits of *Magellan**, and of a most surprising size, some measuring twenty inches in length, and eight in circumference.

They inhabit the seas that wash these islands the whole year, and never go very remote from shore, except when they ascend the rivers. It is remarked in certain rivers that they appear a long time before they spawn, being taken in great abundance in *November*, *December*, and *January*, in the *Thames* and *Dee*, but in others not till *February*, and in *March* and *April* they spawn; after which† they all return to the salt water, and are not seen in the rivers till the next season. It has been observed, that they never come into the *Mersey* as long as there is any snow water in the river.

These fish vary greatly in size, but the largest we ever heard of was thirteen inches long, and weighed half a pound.

They have a very particular scent, from whence is derived one of their *English* names *Smelt*, i. e. smell it. That of *Sparling*, which is used in *Wales* and the north of *England*, is taken from the *French Eperlan*. There is a wonderful disagreement in the opinion of people in respect to the scent of this fish; some assert it flavors of the violet; the *Germans*, for a very different reason, distinguish it by the elegant title of *Stinckfisch* ‡.

Smelts

* *Narborough's Voy.* 123.

† In the river *Conway*, near *Llanrwst*, and in the *Mersey* they never continue above three or four weeks.

‡ And not without reason, if we may depend on *Linnaeus*, who says there are
in

Smelts are often sold in the streets of *London* split and dried. They are called dried *Sparlings*, and are recommended as a relish to a glass of wine in the morning.

It is a fish of a very beautiful form and colour: the head is transparent, and the skin in general so thin, that with a good microscope the blood may be observed to circulate.

The irides are silvery: the pupil of a full black: the under jaw is the longest: in the front of the upper jaw are four large teeth; those in the sides of both are small; in the roof of the mouth are two rows of teeth; on the tongue two others of large teeth. DESCRIP.

The first dorsal fin has eleven rays; the pectoral fins the same number; the ventral eight; the anal fourteen.

The scales are small, and readily drop off: the tail consists of nineteen rays, and is forked.

The color of the back is whitish, with a cast of green, beneath which it is varied with blue, and then succeeds a beautiful gloss of a silvery hue.

in the *Baltic* two varieties, the one, which is called *Nors*, *foetidissimus*, *stercoris instar*, which in the early spring, when the peasants come to buy it, fills all the streets of *Upsal* with the smell. He adds, that at this season agues reign there. *Faun. succ. p. 125.*

** Without Teeth.

152. GWINIAD. Le Lavaret. *Belon*, 278. *pisc.* 61.
 Lavaretus; Piscis *Lemani* lacus *Bencola* *Albula* cærulea. *Scheuchzer* it. *Alp.* II. 481.
 vulgo nuncupatus. Alius Piscis proprius *Lemani* lacus. *Rondel. fluviat.* 162, 163, 164. *Gesner pisc.* 29, 30, 31. *Coregonus* maxilla superiore longiore plana, pinna dorsi officulorum 14. *Arted. synon.* 19.
Albula nobilis, Snepel, Helte? *Schoenvelde*, 12. *Salmo* Lavaretus. *Linn. fyst.* 512.
Vandefius et *Gevandefius*. *Sib. Scot.* 26. *Sijk*, Stor-fijk. *Fann. Suec. No.* 352.
Gwiniad Wallis piscis lacus *Balensis*, *Adelisch*, *Gangisch*, *Weissisch*, *Weissfer* *Ferræ* (ut puto) idem. *Wil. Ictb.* 183. *Raii syn. pisc.* 61. *Adelisch*, *Gangisch*, *Weissisch*, *Weissfer* *Blauling*, *Schnapel*. *Wulff Bo-rufs.* 37.
Lavaretus Allobrogum, *Schellei* *Cumberlandis*. *Wil. Ictb.* 183. *Raii syn.* *Reinankl. Kram.* 389.

THIS fish is an inhabitant of several of the lakes of the *Alpine* parts of *Europe*. It is found in those of *Switzerland*, *Savoy*, and *Italy*; of *Norway*, *Sueden*, *Lapland**, and *Scotland*; in those of *Ireland*, and of *Cumberland*; and in *Wales*, in that of *Llynsegid*, near *Bala*, in *Merionethshire*.

* *Schæffer*, in his history of *Lapland*, p. 140. says, that these fish are caught there of the weight of ten or twelve pounds. We wish *Linnaeus* had executed his intention of favoring the world with his *Lachesis Laponica*, in which he promised a complete history of that country. I once reminded him of it, and it is with true regret, that I give his answer:—*Nunc nimis sero inciperem,*

Me quoque debilitat series immensa laborum,

Ante meum tempus cogor et esse senem :

Firma sit illa licet solvetur in æquore navis,

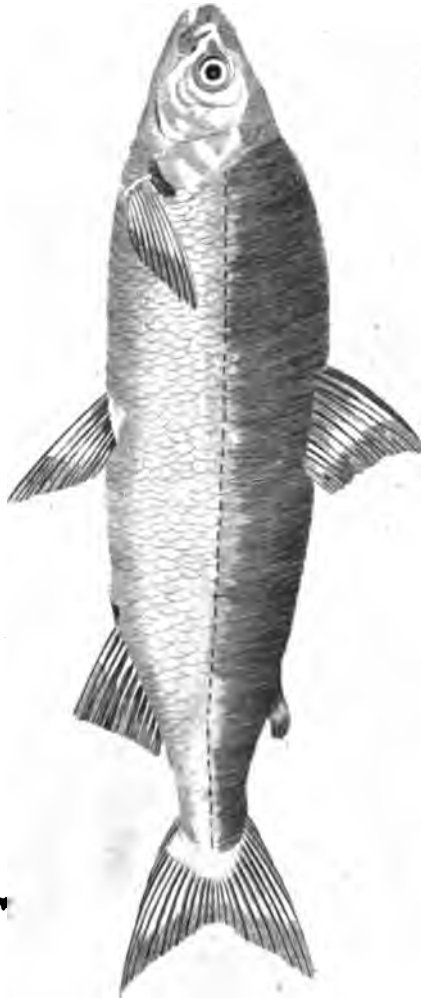
Quæ nunquam liquidis sicca carebit aquis.

It

H. LXII.

GWINLAD.

PLATE 152.



Williamson

Magell Ship

It is the same with the *Ferra* of the lake of *Geneva*, the *Schelly**, of *Hulse-water*; the *Pollen* of *Lough Neagh*, and the *Vangis* and *Juvangis* of *Loch Mabon*. The *Scotch* have a tradition that it was first introduced there by the beauteous queen, their unhappy *Mary Stuart*; and as in her time the *Scotch* court was much frenchified, it seems likely that the name was derived from the *French*, *vendoise*, a dace; to which a slight observer might be tempted to compare it from the whiteness of its scales. The *British* name *Gwiniad*, or whiting, was bestowed on it for the same reason.

It is a gregarious fish, and approaches the shores in vast shoals in spring and in summer, which prove in many places a blessed relief to the poor of inland countries, in the same degree as the annual return of the herring is to those who inhabit the coasts. The *Rev. Mr. Farrish*, of *Carlisle*, wrote me word, that he was assured by a *Hulse-water* fisherman, that last summer he took between seven and eight thousand at one draught. I must not pass by that gentleman without acknowledging my obligations to him for an account of the *Charrs* and the *Schelly*; he being one of the valuable embellishers of this work, for whom I am indebted to the friendship of his late worthy prelate.

The *Gwiniad* is a fish of an insipid taste, and must be eaten soon, for it will not keep long; those that choose to preserve them do it with salt. They die very soon after they are taken. Their spawning season in *Llyntegid* is in *December*.

It has long ago been observed in *Cambden*†, that these fish never

* The inhabitants of *Cumberland* give this name also to the chub, from its being a scaly fish.

† *Fol. II. 790.*

wander into the *Dee*, nor the salmon never ventures into the lake: this must be allowed to be generally the case; but by accident the first have been known to stray as far as *Llandrillo*, six miles down the river, and a salmon has now and then been found trespassing in the lake*.

The largest *Gwiniad* we ever heard of weighed between three and four pounds: we have a *Ferra* we brought with us out of *Switzerland*, that is fifteen inches long; but these are uncommon sizes: the fish which we describe was eleven inches long, its greatest depth three.

The head small, smooth, and of a dusky hue: the eyes very large: the pupil of a deep blue: the nose blunt at the end: the jaws of equal length: the mouth small and toothless: the branchiostegous rays nine: the covers of the gills silvery, powdered with black.

The back is a little arched, and slightly carinated: the color, as far as the lateral line, glossed with deep blue and purple, but towards the lines assumes a silvery cast, tinged with gold, beneath which those colors entirely prevail.

The side line is quite strait, and consists of a series of distinct spots of a dusky hue: the belly is a little prominent, and quite flat on the bottom.

The first dorsal fin is placed almost in the middle, and consists of fourteen branched rays; the second is thin, transparent, and not distant from the tail.

The pectoral fins had eighteen rays, the first the longest, the others gradually shortening; the ventral fins were composed of

* *Hon. D. Barrington's Letter to Dr. Watson. Phil. Trans. 1767.*

twelve,

CLASS IV.

G W I N I A D.

279

twelve, and the anal of fifteen, all branched at their ends; the ventral fins in some are of a fine sky blue, in others as if powdered with blue specks; the ends of the other lower fins are tinged with the same colour.

The tail is very much forked: the scales large and adhere close to the body.

Upper

XXXIV.
PIKE.

Upper jaw shorter than the lower.
Body long, slender, compressed sideways.
One dorsal fin placed near the tail.

153. PIKE.

Lucius. *Aufonii Mofella*, 122.Luccio. *Salvian*. 94.Le Brochet. *Belon*, 292. *Itin*. 104.Lucius. *Rondel. fluvial*. 188. *Gesner*
pisc. 500.Heket, Hecht. *Schouwerde*, 44.Pike, or Pickerel. *Wil. Ich*. 236.*Raii syn. pisc*. 112.Esox nostro plagioplateo. *Arted. syn.*
26.Esox Lucius. *Lin. syst*. 516. *Gruv.*
Zooph. No. 361.Gjadda. *Fann. Succ*. No. 355.Hecht. *Kram*. 388.

THE pike is common in most of the lakes of *Europe*, but the largest are those taken in *Lapland*, which, according to *Schaffer*, are sometimes eight feet long. They are taken there in great abundance, dried, and exported for sale. The largest fish of this kind which we ever heard of in *England*, weighed thirty-five pounds.

According to the common saying, these fish were introduced into *England* in the reign of *Henry VIII.* in 1537. They were so rare, that a pike was sold for double the price of a house-lamb in *February*, and a pickerel for more than a fat capon. How far this may be depended on, I cannot say, for this fish is mentioned in the *Boke* of *St. Albons*, printed in the year 1496, and is not there spoke of as a scarce fish, as was then the case with respect to the carp. Great numbers of this same fish were dressed in the year 1466, at the great feast given by *George Nevil*, Archbishop of *York*.

All writers who treat of this species bring instances of its vast voraciousness. We have known one that was choaked by attempting to swallow one of its own species that proved too large a morsel. Yet its jaws are very loosely connected; and have on each side



PIKE.



SEA PIKE.

side an additional bone like the jaw of a viper, which renders them capable of greater distension when it swallows its prey. It does not confine itself to feed on fish and frogs; it will devour the water rat, and draw down the young ducks as they are swimming about. In a manuscript note which we found, p. 244, of our copy of *Plott's History of Staffordshire*, is the following extraordinary fact: "At Lord Gower's canal at *Trentham*, a pike seized the head of a swan as she was feeding under water, and gorged so much of it as killed them both. The servants perceiving the swan with its head under water for a longer time than usual, took the boat, and found both swan and pike dead*."

But there are instances of its fierceness still more surprizing, and which indeed border a little on the marvellous. *Gesner*† relates, that a famished pike in the *Rhone* seized on the lips of a mule that was brought to water, and that the beast drew the fish out before it could disengage itself. That people have been bit by these voracious creatures while they were washing their legs, and that they will even contend with the otter for its prey, and endeavour to force it out of its mouth‡.

Small fish shew the same uneasiness and detestation at the presence of this tyrant, as the little birds do at the sight of the hawk or owl. When the pike lies dormant near the surface (as is frequently the case) the lesser fish are often observed to swim around it in vast numbers, and in great anxiety. Pike are often haltered in a noose, and taken while they lie thus asleep, as they are often found in the ditches near the *Thames* in the month of *May*.

* This note we afterwards discovered was wrote by Mr. *Plott*, of *Oxford*, who assured me he inserted it on good authority.

† *Gesner pisc.* 503.

‡ *Walton.* 157.

VOL. III.

O o

In

In the shallow water of the *Lincolnshire* fens they are frequently taken in a manner peculiar, we believe, to that county, and the isle of *Ceylon**. The fishermen make use of what is called a crown-net, which is no more than a hemispherical basket, open at top and bottom. He stands at the end of one of the little fen-boats, and frequently puts his basket down to the bottom of the water, then poking a stick into it, discovers whether he has any booty by the striking of the fish; and vast numbers of pike are taken in this manner.

LONGEVITY. The longevity of this fish is very remarkable, if we may credit the accounts given of it. *Rzaczynski*† tells us of one that was ninety years old; but *Gesner*‡ relates, that in the year 1497, a pike was taken near *Hailbrun*, in *Suabia*, with a brazen ring affixed to it, on which were these words in *Greek* characters: *I am the fish which was first of all put into this lake by the hands of the governor of the universe*, *FREDERICK the Second*, the 5th of October, 1230: so that the former must have been an infant to this *Methusalem* of a fish.

Pikes spawn in *March* or *April*, according to the coldness or warmth of the weather. When they are in high season their colors are very fine, being green, spotted with bright yellow; and the gills are of a most vivid and full red. When out of season, the green changes to grey, and the yellow spots turn pale.

DESCRIP. The head is very flat; the upper jaw broad, and is shorter than the lower: the under jaw turns up a little at the end, and is marked with minute punctures.

* *Knox's Hist. Ceylon*, 28.

† *Hist. Nat. Poloniae*, 152.

‡ *Icones piscium*, 316, where a print of the ring is given.

the

The teeth are very sharp, disposed only in the front of the upper jaw, but in both sides of the lower, in the roof of the mouth, and often the tongue. The slit of the mouth, or the gape, is very wide; the eyes small.

The dorsal fin is placed very low on the back, and consists of twenty-one rays; the pectoral of fifteen; the ventral of eleven; the anal of eighteen.

The tail is bifurcated.

- | | | |
|---|--|-----------|
| Βελόν. <i>Arist. Hist. an.</i> II. c. 15. &c. | Esox rostro cuspidato gracili subtereti, | 154. GAR. |
| Βελόν, Παφίς? <i>Athenæus lib.</i> VII. 319. | et spithamali. <i>Arist. synon.</i> 27. | |
| Acus, five Belone <i>Plinii lib.</i> IX. c. 51. | Esox Belone. E. rostro utraque maxilla | |
| Acuchia. <i>Salvian.</i> 68. | dentata. <i>Lin. syst.</i> 517. <i>Gronov.</i> | |
| L'Aguille, ou Orphie. <i>Belon.</i> 161. | <i>Zooph.</i> No. 362. | |
| Acus prima species. <i>Rondel.</i> 227. <i>Ges-</i> | Nabbgjadda, Horngiall. <i>Faun. Suec.</i> | |
| <i>ner pisc.</i> 9. | No. 156. | |
| Horn-fisck. <i>Schoneveldt.</i> 11. | See-naadel, Sack-nadel. <i>Wulff Boruss.</i> | |
| Horn-fish, or Gar-fish. <i>Wil. Ictb.</i> 231. | No. 70. | |
| <i>Raii syn. pisc.</i> 109. | | |

THIS fish which is found in many places, is known by the name of the *Sea Needle*. It comes in shoals on our coasts in the beginning of summer, and precedes the mackrel: it has a resemblance to it in taste, but the light green, which stains the back bone of this fish when boiled, gives many people a disgust to it.

The common sea pike, or sea needle, sometimes grows to the length of three feet, or more. DESCRIP.

The jaws are very long, slender, and sharp pointed; the under extends much farther than the upper, and the edges of both are

O o 2

armed

armed with numbers of short slender teeth: the inside of the mouth is purple: the tongue small: the eyes large: the irides silvery: the nostrils wide and round.

The body is slender: the belly quite flat, bounded on both sides by a rough line.

The pectoral fins consist of fourteen rays; the ventral fin small, and placed very remote from the head, consists of seven rays, the first spiny.

The dorsal fin lies on the very lowest part of the back, consists of sixteen rays; the first are high, the others lower as they approach the tail; the anal fin is of the same form, and placed opposite to the other; and has twenty-one rays. The tail is much forked.

The colors are extremely beautiful when the fish is in the water: the back of a fine green, beneath that appears a rich changeable blue and purple: the sides and belly are of a fine silvery hue.

155. SAURY. Saurus, *Rondel. pisc.* 232. 169.
Skipper, *Cornubiensium.* *Raii syn. pisc.* The Saury. *Tour Scotland* 1769.

THE length is eleven inches: the nose slender: the jaws produced like those of the sea needle, but of equal length. The upper mandible a little incurvated. Their length one inch.

The eyes large; the body anguilliform: but towards the tail grows suddenly smaller, and tapers to a very inconsiderable girth. On the lower part of the back is a small fin, and between it and the

P. LXIV.

SADRY.

PLATE.



with Spotted pattern

Sp. Mackerel

CLASS IV. S A U R Y P I K E.

285

the tail six spurious like those of the mackrel. Correspondent to these, below are the anal fin and six spurious. The pectoral and ventral fins very small: the tail much forked. The back dusky: the belly bright and silvery.

Great numbers of these fish were thrown ashore on the sands of *Leith*, near *Edinburgh*, after a great storm in *November 1768*. *Rondeletius* describes this species among the fish of the *Mediterranean*; but speaks of it as a rare kind.

Teeth

XXXV.
ARGENTINE.

Teeth in the jaws and tongue.

Eight branchiostegous rays.

Vent near the tail.

The ventral fins composed of many rays.

156. SHEPPY. *Sphyræna parva*, five *sphyræna secunda* Argentina. *Arted. synon.* 17.
species. Rendel. 227. *Gesner pisc.* 883? Argentina *Sphyræna.* *Lin. syst.* 518.
Pisciculus Romæ, Argentina dictus. *Wil.* *Gronov. Zooph. No.* 349?
Ich. 229. *Raii syn. pisc.* 108?

A LITTLE fish, which I believe to be of this species, was brought to me in 1769, taken in the sea near *Downing*.

The length was two inches one-fourth: the eyes large; and irides silvery. The lower jaw sloped much: the teeth small.

The body compressed, and of an equal depth almost to the anal fin. The tail forked.

The back was of a dusky green: the sides and covers of the gills as if plated with silver. The lateral line was in the middle and quite straight.

On each side of the belly was a row of circular punctures: above them another, which ceased near the vent.

Mr. *Willughby* says, that the outside of the air bladder of this fish consists of a foliaceous silvery skin, which was made use of in the manufacture of artificial pearl.

The

LXV.

Nº 156.

ARGENTINE



ATHERINE

Nº 157.



The upper jaw a little flat.
Six branchiostegous rays.
A silvery stripe along the side.

XXXVI.
ATHERINE.

Hepsetus? *Belon*, 209. dem. *Wil. Ictb.* 209. *Raii syn.* 157. ATHERINE.
Επιδροσ, *Atherina*. *Rondel.* 215, 216. *pisc.* 79.
Bossuet *Epig.* 66, 67. *Gesner pisc.* *Atherina*. *Arted. synon. App.* 116.
71, 72. *Atherina Hepsetus*. *A. pinna ani radiis*
Pisciculus Anguilla Venetiis dictus; forte fere duodecim. *Lin. syst.* 519. *Gronov. Zooph. No.* 399.
Hepsetus Rondeletii, vel *Atherina* ejus-

THIS species is very common in the sea near *Southampton*, where it is called a *Smelt*. The highest season is from *March* to the latter end of *May*, or beginning of *June*; in which month it spawns. It never deserts the place, and is constantly taken except in hard frost. It is also found on other coasts of our island.

The length is above four inches one-fourth. The back strait: the belly a little protuberant. On the back are two fins. I neglected to count the rays. The tail is much forked.

The fish is semipellucid, covered with scales: the color silvery, tinged with yellow: the side line strait: beneath it is a row of small black spots.

Body

XXXVII.
MULLET.

Body and covers of the gills clothed with large scales.
Six incurvated branchiostegous rays.
Teeth on the tongue and in the palate only.

158. MUL-
LET.

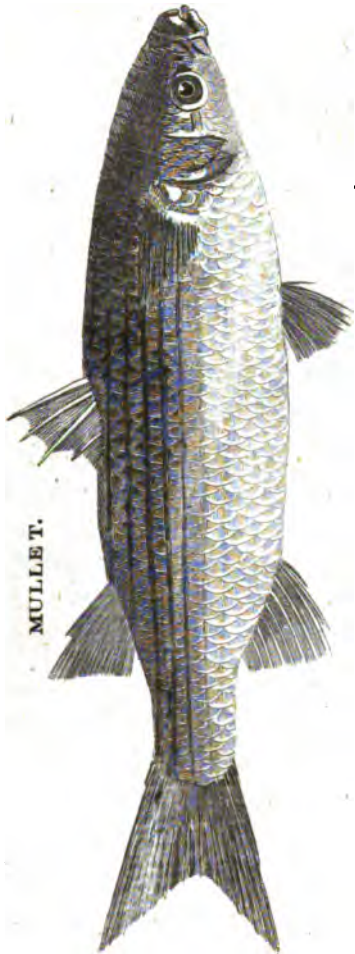
Κεφαλος, Κετρεύς. *Arist. Hist. an lib.* Cephalus. *Rondel.* 260. *Gesner pisc.*
V. c. 11, &c. 549.
Κετρεύς. *Oppian Halieut.* III. 98. *Arbe-* Mullet. *Wil. Ictb.* 274. *Raii syn.*
næus lib. VII. 306. *pisc.* 84.
Mugil *Ovid Halieut.* 37. *Plinii lib.* Mugil. *Arted. synon.* 52.
IX. c. 8. 17. Mugil cephalus. M. pinna dorsali an-
Cephalo. *Salvian,* 75. teriore quinque radiate. *Lin. ffs.*
Le Mulet. *Belon,* 205. 520. *Gravov. Zooph.* No. 397.

THE mullet is justly ranked by *Aristotle* among the *Pisces Littorales*, or those that prefer the shores to the full sea: they are found in great plenty on several of the sandy coasts of our island, and haunt in particular those small bays that have influxes of fresh water. They come in great shoals, and keep rooting like hogs in the sand or mud, leaving their traces in form of large round holes. They are very cunning, and when surrounded with a net, the whole shoal frequently escapes by leaping over it, for when one takes the lead, the others are sure to follow: this circumstance is taken notice of by *Oppian*; whether the latter part of his observation is true, is what we are uncertain.

Κετρεύς

H. 1391.

MULLET.



Nº 458.

PARR.



Nº 78.

M. Griffiths del

Κετρεὺς μὲν πλεκῆσιν ἐν ἀγκύνησι λίνιοι,
 Ελκόμεν^Θ δόλον ἔτι περιδρομον ἠγνοίησεν.
 Ὡς δ' ἀναδρώσκει λελημένος ὕδατος ἄκρη,
 Ορθὸς ἄνω σπεύδων ὅσον σθένος αἵματι κῆφῳ
 Ὀρμῆσαι· βαλῆς δὲ σαόφρονος ἐκ ἐμάττησε·
 Πολλάκι γὰρ ριπῆσι καὶ ὕατα πείσματα φελλῶν
 Ρηιδίως ὑπερᾶλτο, καὶ ἐξήλυξε μόροιο.
 Εἰ δ' ὄγ' ἀνορμηθεὶς πρῶτον τάλον, αὐτὶς ὀλισθῇ
 Ες βρόχον, ἐκ ἔτ' ἔπειτα βιάζεται, ἐδ' ἀνορέει,
 Αχνύμενος· πείρη δὲ μαθὼν ἀποπαύεται ὀρμῆς.

The *Mullet**, when encircling seines inclose,
 The fatal threads and treach'rous bosom knows.
 Instant he rallies all his vig'rous powers,
 And faithful aid of every nerve implores ;
 O'er battlements of cork up-darted flies,
 And finds from air th' escape that sea denies.
 But should the first attempt his hopes deceive,
 And fatal space th' imprison'd fall receive,
 Exhausted strength no second leap supplies ;
 Self-doom'd to death the prostrate victim lies,
 Resign'd with painful expectation waits,
 'Till thinner elements compleat his fates.

JONES.

Oppian had good opportunity of examining these fish, for they swarm during some seasons on the coasts of the *Mediterranean*. Near *Martegues*, in the south of *France*, abundance of mullets are taken in weres made of reeds placed in the shallows. Of the milts of the males, which are there called *Alletants*, and of the roes of

* Mr. Jones, by mistake, translates it the *Barbel*.

the females, which are called *Botar*, is made *Botargo*. The materials are taken out entire, covered with salt for four or five hours, then pressed a little between two boards or stones, washed, and at last dried in the sun for thirteen or fourteen days*.

This fish was sometimes made the instrument of a horrible punishment for unfortunate gallants. It was in use both at *Athens*† and at *Rome*; but we doubt much whether it was a legal one: for we rather suspect it was inflicted instantaneously by the injured and enraged husband, at a season when

Furor arma ministrat.

Juvenal seems to speak of it in that light as well as *Horace*: the former, relating the revenge taken by the exasperated spouse, describes it as very various;

*Necat hic ferro, secat ille cruentis
Verberibus, quosdam mæchos et MURILIS intrat ‡.*

The passage in *Horace* seems not to have been attended to by the critics; but when he mentions the distresses that the invader of another's bed underwent, he most certainly alludes to this penalty:

*Discinã tunicã fugiendum est, ac pede nudo;
Ne nummi pereant, aut PYGA, aut denique fama §.*

* Mr. Willughby's notes during his travels. Vide Harris's *Col. Voy.* II. 721.

† *Legibus Atheniensium adulteri ex ægypto deprehensi pœna fuit παρὰ νόμου; Rapha-ni loco utebantur nonnunquam mugile pisce, interdum scorpione.* *Causauboni animad-vers. in Athenæum, lib. I.*

‡ *Satyr. X.* 316

§ *Satyr. II. lib. I.* 132.

The

The mullet is an excellent fish for the table, but at present not a fashionable one.

The head is almost square, and is flat on the top: the nose blunt: lips thick. It has no teeth, only in the upper lip is a small roughness: between the eyes and the mouth is a hard callus.

DESCRIP.

The pupil of the eye is black, encircled with a small silvery line: the upper part of the iris is hazel; the lower silvery.

The form of the body is pretty thick, but the back not greatly elevated. The scales are large and deciduous.

The first dorsal fin is placed near the middle of the back, and consists of four strong spines; the second of nine soft branching rays; the pectoral has sixteen, the ventral six; the first a strong spine, the others soft.

The tail is much forked.

The color of the back is dusky, varied with blue and green: the sides silvery, marked with broad dusky parallel lines, reaching from head to tail: the belly is silvery.

XXXVIII.
FLYING
FISH.

Head covered with scales.

Pectoral fins almost as long as the body.

159. WING-
ED. *Hirundo* *Plinii lib.* IX. c. 26. *pisc.* 553. *Wil. Ictb.* 233.
 * *Εἰσπνοτός* καὶ **Ἀδωνίς*? *Atbenæus lib.* *Exocætus.* *Arted. synon.* 18.
 VIII. 332. *Oppian Halieut.* I. 157. *Exocætus volitans.* E. abdomine utrin-
 χελιδὼν? *Oppian II.* 459. que carinato. *Lin. syst.* 520. *Amen.*
 Rondine. *Salvian,* 186. *Acad. I.* 603. *Gronov. Zooph. No.*
 Hirondelle de mer. *Belon,* 189. 359.
 Mugil alatus. *Rondel.* 267. *Gesner*

WE can produce but a single instance of this species† being taken on the *British* coasts. In June 1765, one was caught at a small distance below *Caermarthen*, in the river *Towy*, being brought up by the tide which flows as far as the town. It is a fish frequent enough in the *Mediterranean*, and also in the ocean, where it leads a most miserable life. In its own element it is perpetually harassed by the *Dorados*, and other fish of prey. If it endeavors to avoid them by having recourse to the air, it either meets its fate from the *Gulls*, or the *Albatross*, or is forced down again into the mouth of the inhabitants of water, who below keep pace with its aerial excursion. Neither is it unfrequent that whole shoals of them fall on board of ships that navigate the seas of warm

* *Pliny* mentions it under the same name, *lib.* IX. c. 19.

† This fish was seen by *John Strange*, Esq; at *Caermarthen*, who was so obliging as to communicate to me the account of it.

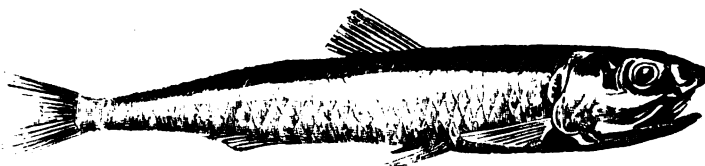
climates :

Pl. LXVII.



FLYING FISH.

Nº 159.



ANCHOVY.

Nº 163.

climates: it is therefore apparent, that nature in this creature hath supplied it with instruments that frequently bring it into that destruction it strives to avoid, by having recourse to an element unnatural to it.

The antients were acquainted with this species: *Pliny* mentions it under the name of *Hirundo*, and speaks of its flying faculty. It is probable that *Oppian* intended the same by his *Ωκειαί χελιδόνες*, or the *swift swallow fish*. What *Atbenæus* and the last cited author mean by the *Εξονκτος* and *Αδωνις*, is not so evident: they assert it quitted the water and slept on the rocks, from whence it tumbled with precipitation when disturbed by the unfriendly birds: on these accounts Ichthyologists seem to have made it synonymous with the *flying fish*.

It resembles the herring in form of the body, but the back is flat: the scales large and silvery: the dorsal fin is small, and placed near the tail: the pectoral fins, the instruments of flight, are almost as long as the body: the tail is bifurcated.

DESCRIP.

Eight.

XXXIX.
HERRING,

Eight branchiostegous rays.

The belly extremely sharp, and often serrated.

160. BRI-
TISH*Aringha ex cimbricis littoribus. Jovius,**143. Hareng, espece de Chalcis. Belon,**169. Harengus. Rondel. 222. Gesner pisc.**410. Heringk. Schonevelde, 37.**Herring. Wil. Ictb. 219. Raii syn. pisc. 103.**Clupea maxilla inferiore longiore maculis carens. Arted. Synon. 14. α β.**Clupea Harengus. Cl. immaculata, maxilla inferiore longiore. Lin. syst. 522. Gronov. Zooph. No. 348.**Sill. Faun. Suec. No. 357. α. Stromming. Faun. Suec. No. 357. β.**Stromling*. Wulf. Boruss. No. 50.*

NAME.

THE herring was unknown to the ancients, notwithstanding the words *χαλκίς* and *μακίς*, are by translators rendered *Halec*†. the characters given of those fish are common to such numbers of different species, as render it impossible to say which they intended.

PLACE.

Herrings are found from the highest northern latitudes yet known, as low as the northern coasts of *France*; and excepting one instance brought by *Dod*‡, of a few being once taken in the Bay of *Tangier*, are never found more southerly.

They are met with in vast shoals on the coast of *America*, as low as *Carolina*. In *Chesapeake Bay* is an annual inundation of those

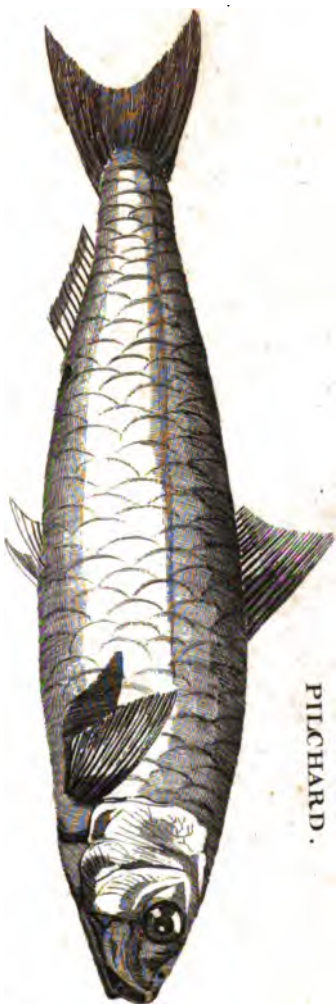
* The herring of the *Baltic*, in all respects is like ours, but smaller.

† Which word, in spite of all *lexicographers*, never signified any thing but the *garum* or pickle. *Vide p. 221.*

‡ *Natural Hist. of the Herring, p. 27.*

fish

EXVII.



PILCHARD.

nr 102.



HERRING.

nr 100.

Sullivan and del

J. Magill sculp

fish, which cover the shores in such quantities as to become a nuisance*. We find them again in the seas of *Kamtzchatka*, and possibly they reach *Japan*; for *Kämpfer* mentions; in his account of the fish of that country, some that are congenerous.

The great winter rendezvous of the herring is within the *Arctic* circle: there they continue for many months in order to recruit themselves after the fatigue of spawning; the seas within that space swarming with insect food, in a degree far greater than in our warmer latitudes.

This mighty army begins to put itself in motion in the spring; we distinguish this vast body by that name, for the word herring is derived from the *German*, *Heer*; an army, to express their numbers.

MIGRA-
TIONS

They begin to appear off the *Shetland* isles in *April* and *May*; these are only forerunners of the grand shoal which comes in *June*, and their appearance is marked by certain signs by the numbers of birds, such as gannets, and others which follow to prey on them: but when the main body approaches, its breadth and its depth is such as to alter the appearance of the very ocean. It is divided into distinct columns of five or six miles in length, and three or four in breadth, and they drive the water before them with a kind of rippling: sometimes they sink for the space of ten or fifteen minutes, then rise again to the surface; and in bright weather reflect a variety of splendid colors, like a field of the most precious gems, in which, or rather in a much more valuable light, should this stupendous gift of Providence be considered by the inhabitants of the *British* isles.

* *Catfish* Carol. II. XXXIII.

The

SEPARATION.

The first check this army meets in its march southward, is from the *Shetland* isles, which divide it into two parts; one wing takes to the east, the other to the western shores of *Great Britain*, and fill every bay and creek with their numbers; others pass on towards *Yarmouth*, the great and antient mart of herrings; they then pass through the *British* channel, and after that in a manner disappear. Those which take to the west, after offering themselves to the *Hebrides*, where the great stationary fishery is, proceed towards the north of *Ireland*, where they meet with a second interruption, and are obliged to make a second division; the one takes to the western side, and is scarce perceived, being soon lost in the immensity of the *Atlantic*; but the other, which passes into the *Irish* sea, rejoices and feeds the inhabitants of most of the coasts that border on it.

These brigades, as we may call them, which are thus separated from the greater columns, are often capricious in their motions, and do not shew an invariable attachment to their haunts. We have had in our time instances of their entirely quitting the coasts of *Cardiganshire*, and visiting those of *Caernarvonshire* and *Flinthshire*, where they continued for a few years, but in the present year have quite deserted our sea, and returned to their old seats. The season of their appearance among us was very late, never before the latter end of *November*; their continuance till *February*.

PROVIDENTIAL INSTINCT.

Were we inclined to consider this partial migration of the herring in a moral light, we might reflect with veneration and awe on the mighty Power which originally impressed on this most useful body of his creatures, the instinct that directs and points out the course, that blesses and enriches these islands, which causes them at certain and invariable times to quit the vast polar deeps, and offer themselves

selves to our expecting fleets. That benevolent Being has never, from the earliest records, been once known to withdraw this blessing from the whole, though he often thinks proper to deny it to particulars; yet this partial failure (for which we see no natural reason) should fill us with the most exalted and grateful sense of his Providence, for impressing so invariable and general instinct on these fish towards a southward migration, when the whole is to be benefited, and to withdraw it only when a minute part is to suffer.

This instinct was given them, that they might remove for the sake of depositing their spawn in warmer seas, that would mature and vivify it more assuredly than those of the frigid zone. It is not from defect of food that they set themselves in motion, for they come to us full of fat, and on their return are almost universally observed to be lean and miserable. What their food is near the pole, we are not yet informed; but in our seas they feed much on the *Oniscus Marinus*, a crustaceous insect, and sometimes on their own fry. The herring will rise to a fly. Mr. Low of Birsa in the Orkneys assures me, that he has caught many thousands with a common trout fly, in a deep hole in a rivulet, into which the tide flows. He commonly went at the fall of the tide. They were young fish, from six to eight inches in length.

They are in full roe the end of *June*, and continue in perfection till the beginning of winter, when they begin to deposit their spawn. The young herrings begin to approach the shores in *July* and *August*, and are then from half an inch to two inches long: those in *Yorkshire* are called *Herring Sile**. Though we have no parti-

SPAWNING.

FOOD.

RETURN.

* The *Suedes* and *Danes* call the old herring *Sill*; but the people of *Sleswick*, from whence the *Anglo-Saxons* came, call the fry *Sylen*.

cular authority for it, yet as very few young herrings are found in our seas during winter, it seems most certain that they must return to their parental haunts beneath the ice, to repair the vast destruction of their race during summer, by men, fowl, and fish. Some of the old herrings continue on our coasts the whole year: the *Scarborough* fishermen never put down their nets but they catch a few; but the numbers that remain are not worth mention in comparison to the numbers that return.

DESCRIP.

Herrings vary greatly in size. Mr. *Travis* communicated to me the information of an experienced fisher, who informed him that there is sometimes taken near *Yarmouth*, a herring distinguished by a black spot above the nose; and that he once saw one that was twenty-one inches and an half long. He insisted that it was a different species, and varied as much from the common herring as that does from the pilchard. This we mention in order to incite some curious person on that coast to a farther enquiry.

The eye is very large: the edges of the upper jaw and the tongue are very rough, but the whole mouth is void of teeth: the gill covers are very loose, and open very wide; which occasions the almost instant death of the herring when taken out of the water, which is well known, even to a proverb.

The dorsal fin consists of about seventeen rays, and is placed beyond the centre of gravity, so that when the fish is suspended by it, the head immediately dips down: the two ventral fins have nine rays; the pectoral seventeen; the anal fourteen: the tail is much forked.

The lateral line is not apparent, unless the scales are taken off: the sides are compressed: the belly sharply carinated, but the ridge quite smooth, and not in the least serrated.

The

The scales are large, thin, and fall off with a slight touch.

The color of the back and sides green, varied with blue: the belly silvery.

COLOR.

The herring fishery is of great antiquity: the industrious *Dutch* first engaged in it about the year 1164: they were in possession of it for several centuries, but at length its value became so justly to be known, that it gave rise to most obstinate and well-disputed wars between the *English* and them; but still their diligence and skill gives them a superiority over us in that branch of trade.

FISHERY.

Our great stations are off the *Shetland* and *Western Isles*, and off the coast of *Norfolk*, in which the *Dutch* also share. *Tarmouth* has long been famous for its herring fair*; that town is obliged, by its charter, to send to the sheriffs of *Norwich* one hundred herrings, to be made into twenty-four pies, by them to be delivered to the lord of the manor of *East Carleton*, who is to convey them to the king†. The facetious Doctor *Fuller*‡ takes notice of the great repute the county of *Norfolk* was in for this fish, and, with his usual archness, calls a red herring, a *Norfolk Capon*.

In 1195, *Dunwich* in *Suffolk* accounted to the king for their yearly fee farm rent, £120, 1 mark, and 24000 herrings, 12000 for the monks of *Eye*, and 12000 for those of *Ely*.

The *Dutch* are most extravagantly fond of this fish when it is pickled. A premium is given to the first bus that arrives in *Holland* with a lading of this their *ambrosia*, and a vast price given

* This fair was regulated by an act, commonly called the *Statute of Herrings*, in the 31st year of *Edward III*.

† *Cambden Britan.* I. 458.

‡ *British Worthies*, 238.

for each keg. We have been in the country at that happy minute, and observed as much joy among the inhabitants on its arrival, as the *Egyptians* shew on the first overflowing of the *Nile*. *Flanders* had the honor of inventing the art of pickling herrings. One *William Beukelen*, of *Biervlet*, near *Sluys*, hit on this useful expedient: from him was derived the name *pickle*, which we borrow from the *Dutch* and *German*. *Beukelen* died in 1397. The emperor *Charles V.* held his memory in such veneration for the service he did mankind, as to do his tomb the honor of a visit. It is very singular that most nations give the name of their favorite dish to the facetious attendant on every mountebank. Thus the *Dutch* call him **PICKLE HERRING**; the *Italians*, **MACARONI**; the *French*, **JEAN POTTAGE**; the *Germans*, **HANS WURST** *; and we dignify him with the title of **JACK PUDDING**.

161. PIL-
CHARD.

Pilchard. *Fuller's Brit. Worthies*, 194.

syn. pisc. 104.

Peltzer. *Schonevelde*, 40.

Clupea ♂. *Arted. synon.* 16.

The Pilchard. *Wil. Ich.* 223. *Raii* Pilchard. *Borlase Cornwall*, 272.

THE pilchard appears in vast shoals off the *Cornish* coasts about the middle of *July*, disappearing the beginning of winter, yet sometimes a few return again after *Christmas*. Their winter retreat is the same with that of the herring, and their motives for migrating the same. They affect, during summer, a warmer latitude, for they are not found in any quantities on any of our coasts except

* That is, *Jack Sausage*.

those

those of *Cornwall*, that is to say, from *Fowey* harbor to the *Scilly* isles, between which places the shoals keep shifting for some weeks.

The approach of the pilchard is known by much the same signs as those that indicate the arrival of the herring. Persons, called in *Cornwall* *Huers*, are placed on the cliffs, to point to the boats stationed off the land the course of the fish. By the 1st of *James I.* c. 23, fishermen are empowered to go on the grounds of others to *bue*, without being liable to actions of trespass, which before occasioned frequent lawsuits.

The emoluments that accrue to the inhabitants of that county are great, and are best expressed in the words of Doctor *W. Borlase*, in his account of the *Pilchard* fishery.

“ It employs a great number of men on the sea, training them
 “ thereby to naval affairs; employs men, women, and children, at
 “ land, in salting, pressing, washing, and cleaning, in making
 “ boats, nets, ropes, casks, and all the trades depending on their
 “ construction and sale. The poor is fed with the offals of the cap-
 “ tures, the land with the refuse of the fish and salt, the merchant
 “ finds the gains of commission and honest commerce, the fisher-
 “ man the gains of the fish. Ships are often freighted hither with
 “ salt, and into foreign countries with the fish, carrying off at the
 “ same time part of our tin. The usual produce of the number of
 “ hogsheds exported each year, for ten years, from 1747 to 1756
 “ inclusive, from the four ports of *Fawey*, *Falmouth*, *Penzance*, and
 “ *St. Ives*, it appears that *Fawey* has exported yearly 1732 hogsheds;
 “ *Falmouth*, 14631 hogsheds and two-thirds; *Penzance* and *Mounts-*
 “ *Bay*, 12149 hogsheds and one-third; *St. Ives*, 1282 hogsheds:
 “ in all amounting to 29795 hogsheds. Every hoghead for ten
 “ years last past, together with the bounty allowed for each hog-
 “ head

“head exported, and the oil made out of each hoghead, has a-
 “mounted, one year with another at an average, to the price of
 “one pound thirteen shillings and three-pence; so that the cash
 “paid for pilchards exported has, at a medium, annually amount-
 “ed to the sum of forty-nine thousand five hundred and thirty-two
 “pounds ten shillings.”

The numbers that are taken at one shooting out of the nets, is amazingly great. Dr. *Borlase* assured me, that on the 5th of *October*, 1767, there were at one time inclosed in *St. Ives's Bay* 7000 hogheads, each hoghead containing 35000 fish, in all 245000000.

DESCRIP.

This fish has a general likeness to the herring, but differs in some particulars very essentially; we therefore describe it comparatively with the other, having one of each species before us, both of them of the same length, *viz.* nine inches and an half.

The body of the pilchard is less compressed than that of the herring, being thicker and rounder: the nose is shorter in proportion, and turns up: the under jaw is shorter.

The back is more elevated: the belly less sharp: the dorsal fin of the pilchard is placed exactly in the centre of gravity, so that when taken up by it, the body preserves an equilibrium, whereas that of the herring dips at the head: the dorsal fin of the pilchard we examined, being placed only three inches eight tenths from the tip of the nose; that of the herring four inches one tenth.

The scales of the pilchard adhere very closely, whereas those of the herring very easily drop off.

The pilchard is in general less than the herring; the specimen we describe being a very large one.

The pilchard is fatter, or more full of oil.

Spratti.

Spratti. *Wil. Ich.* 221. *Raii syn. pisc.*
105.

Clupea quadriuncialis, maxilla inferiore, longiore, ventre acutissimo.

Arted. synon. 17.

Clupea Sprattus, Cl. pinna dorsali radiis tredecim. *Lin. syst.* 523.

Hwufsbuk. Faun. Suec. No. 358.

162. SPRAT.

MR. *Willugbby* and Mr. *Ray* were of opinion, that these fish were the fry of the herring: we are induced to dissent from them, not only because on comparing a sprat and young herring of equal size, we discovered some specific differences, but likewise for another reason: the former visit our coasts, and continue with us in shoals innumerable, when the others in general have retired to the great northern deeps.

They come into the river *Thames*, below bridge, the beginning of *November*, and leave it in *March*, and are, during their season, a great relief to the poor of the capital.

At *Gravesend*, and at *Yarmouth*, they are cured like red herrings; they are sometimes pickled, and are little inferior in flavor to the *Anchovy*, but the bones will not dissolve like those of the latter. Mr. *Forster* tells me, that in the *Baltic* they preserve them in the same manner, and call them *Breitling*, i. e. the little deep fish, as being deeper than the *Stromling*, or *Baltic* herring.

The sprat grows to about the length of five inches: the body is much deeper than that of a young herring of equal length: the back fin is placed more remote from the nose than that of the herring, and we think had sixteen rays. But one great distinction between this fish, the herring and pilchard, is the belly: that of the

DESCRIP.

two

two first being quite smooth, that of the last most strongly serrated. Another is, that the herring has fifty six vertebræ; this only forty-eight.

163. ANCHO- *Ἐγκραῖλος?* *Arist. Hist. an. Lib. VI. c. 15.* *Lycofomus, sehe mareneken? Scho-*
 VY. *novelde, 46. Tab. 5.*
Ἐγκρασίχοδος? *Athenæus. Lib. VII. c. 285.* *Anchovy. Wil. Itab. 225. Raii syn.*
pisc. 107.
L'Anchoy? Belon, 165. *Clupea maxilla superiore longiore.*
Encraicholus? Rondel. 211. *Arsed. synon. 17.*
Gesner pisc. 68. *Clupea encraicholus. Lin. syst. 523.*

THE true anchovies are taken in vast quantities in the *Mediterranean*, and are brought over here pickled. The great fishery is at *Gorgona*, a small isle west of *Leghorn*.

Mr. Ray discovered this species in the estuary of the *Dee* above a century ago*. Since that time no notice has been taken of it, till a few were taken near my house in 1769.

The length of the largest was six inches and an half: the body slender, but thicker in proportion than the herring.

The eyes were large: the irides white, with a cast of yellow: the under jaw much shorter than the upper: the teeth small; a row in each jaw, and another on the middle of the tongue. The tongue doubly ciliated on both sides. The dorsal fin consisted of twelve rays, was transparent, and placed nearer the nose than the tail.

The scales large and deciduous: back green and semipellucid:

* Ray's Letters, 47.

№ 176.

WHITE BAIT.



• № 164.

SHAD.



Pl. LXIX.

CLASS IV.

S H A D.

sides and belly silvery and opaque : edge of the belly smooth : the tail forked.

- Θρισσα?* *Arist. Hist. an. lib. IX. c. 37.* *Shad, or Mother of Herrings. Wil.*
Strabo lib. XV. 486. XVII. 566. *Ich. 227. Raii syn. pisc. 105.*
Athenæus. lib. IV 131. VII. 328. *Clupea apice maxilla superiore bifido,*
Oppian Halieut. l. 244. *maculis nigris utrinque. Arist. synon.*
Alaufa? *Ausonii Mosella, 128.* *15.*
Laccia, chiepa. Salwian, 104. *Clupea alofa. Cl. lateribus nigro macu-*
L'Alofe. Belon, 307. *latis, rostro bifido. Lin. syst. 523.*
Thrissa. Rondel. 220. Gesner pisc. 20. *Gronov. Zooph. No. 347.*
Bayeke, Meyfisch. Schoneveldt, 13.

NEITHER *Aristotle*, *Athenæus*, nor *Oppian*, have described their *Θρισσα* with such precision, as to induce us to translate it the *Shad*, without affixing to it our sceptic mark. *Ausonius* has been equally negligent in respect to his *Alaufa*: all he tells us is, that it was a very bad fish :

Stridenteque focus obsonia plebis ALAUSAS.

Alausæ crackling on the embers are
Of wretched poverty, th' insipid fare.

But commentators have agreed to render the *Θρισσα* of the first, and the *Alaufa* of the last, by the word *Shad*. Perhaps they were directed by the authority of *Strabo*, who mentions the *Θρισσα* the supposed *Shad*, and the *Κεραυς*, or *Mullet*, as fish that ascend the

Nile at certain seasons, which, with the *Dolphin** of that river, he says, are the only kinds that venture up from the sea for fear of the crocodile. That the two first are fish of passage in the *Nile*, is confirmed to us by *Belonius*†, and by *Hasselquist*‡. The last says it is found in the *Mediterranean* near *Smyrna*, and on the coast of *Ægypt*, near *Rosetto*; and that in the months *December* and *January* it ascends the *Nile*, as high as *Cairo*: that it is stuffed with pot marjoram, and when dressed in that manner will very nearly intoxicate the eater.

In *Great Britain* the *Severn* affords this fish in higher perfection than any other river. It makes its first appearance there in *May*, but in very warm seasons in *April*; for its arrival, sooner or later, depends much on the temper of the air. It continues in the river about two months, and then is succeeded by a variety which we shall have occasion to mention hereafter.

The *Severn* shad is esteemed a very delicate fish about the time of its first appearance, especially in that part of the river that flows by *Gloucester*, where they are taken in nets, and usually sell dearer than salmon: some are sent to *London*, where the fishmongers distinguish them from those of the *Thames*, by the *French* name of *Alose*.

Whether they spawn in this river and the *Wye* is not determined, for their fry has not yet been ascertained. The old fish come from

* This is the *Dolphin* of the *Nile*, a fish now unknown to us. *Pliny lib. VIII. c. 25.* says, it had a sharp fin on its back, with which it destroyed the crocodile, by thrusting it into the belly of that animal, the only penetrable place.

† *Belon. Itin.* 98.

‡ *P.* 385. 388. *Suedisch* edition.

the sea into the river in full roe. In the months of *July* and *August*, multitudes of bleak frequent the river near *Gloucester*; some of them are as big as a small herring, and these the fishermen erroneously suspect to be the fry of the shad. Numbers of these are taken near *Gloucester* in those months only, but none of the emaciated shad are ever caught in their return *.

The *Thames* shad does not frequent that river till the latter end of *May* or the beginning of *June*, and is esteemed a very insipid and coarse fish. The *Severn* shad is sometimes caught in the *Thames*, though rarely, and called *Allis* (no doubt *Alose* the *French* name,) by the fishermen in that river. About the same time, and rather earlier, the variety called near *Gloucester* the *Twaite*, makes its appearance, and is taken in great numbers in the *Severn*, and is held in as great disrepute as the shad of the *Thames*. The differences between each variety are as follows:

The true *Shad* weighs sometimes eight pounds, but their general size is from four to five.

The *Twaite*, on the contrary, weighs from half a pound to two pounds, which it never exceeds.

The *twaite* differs from a small shad only in having one or more round black spots on the sides; if only one, it is always near the gill, but commonly there are three or four, placed one under the other †.

The other particulars agree in each so exactly, that the same description will serve for both.

* *Belon* also observes, that none are taken in their return, *on les prend en montant contre les rivières, et jamais en descendant.*

† I must here acknowledge my obligations to Doctor *Lysons*, of *Gloucester*, for his communications relating to this fish, as well as to several other articles relating to those of the *Severn*.

The head slopes down considerably from the back, which at the beginning is very convex, and rather sharp : the body from thence grows gradually less to the tail.

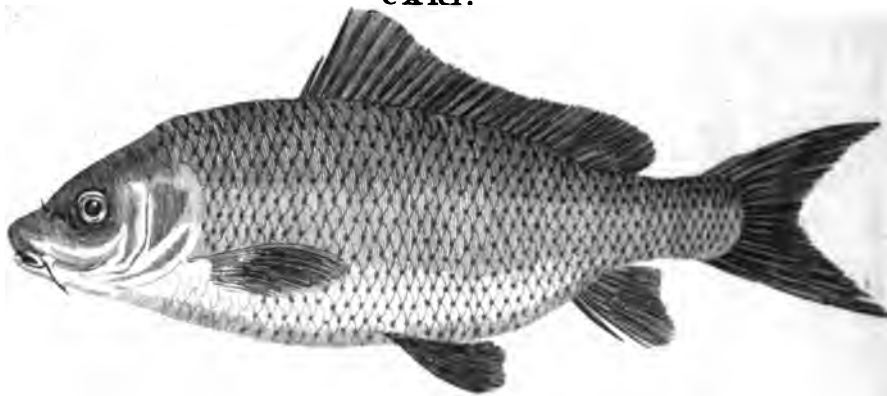
The under jaw is rather longer than the upper : the teeth very minute.

The dorsal fin is placed very near the centre, is small, and the middle rays are the longest : the pectoral and ventral fins are small : the tail vastly forked : the belly extremely sharp, and most strongly serrated.

The back is of a dusky blue : above the gills begins a line of dark spots, which mark the upper part of the back on each side ; the number of these spots is uncertain in different fish, from four to ten.

The

CARP.



BREAM.

Nº 169.



The mouth without teeth.
Three branchiostegous rays.
One dorsal fin.

XL. C A R P.

* With bearded mouths.

Κυπρίνος? *Arist. Hist. an. lib. IV. 8.* Carp. *Wil. Ichth. 245. Raii syn. pisc. 115.* 165. C A R P.
VI. 40. VIII. 20. II. 30. *Oppian* Cyprinus cirris quatuor, ossiculo tertio
Halient. I. 101. 592. pinnarum dorſi, ac ani uncinulis
Raina Barbara. Salvian, 92. armato. *Arist. synon. 3.*
La Carpe. Belon, 267. Cyprinus carpio. C. pinna ani radiis 9.
Cyprinus. Rondel. fluviat. 150. Gesner cirris 4. pinna dorsalis radio secun-
pisc. 309. do postice serrato. *Lin. syst. 525.*
Cyprinus nobilis, edle Karpe, Karpffe. *Gronov. Zooph. No. 330.*
Schoneveldt, 32. Karp. *Fauſt. Suec. No. 359.*

THIS is one of the naturalized fish of our country, being supposed to have been introduced here by *Leonard Mascall*, about the year 1514*, to whom we were also indebted for that excellent apple the *pepin*. The many good things that our island wanted before that period, are enumerated in this old distich:

Turkies, carps, hops, pickerel, and beer,
Came into *England* all in one year. †

* *Fuller's British Worthies, Suffex. 113.*

† I insert this note to shew that it was known here before. The extract was made from *the Bokes of St. Alban's* printed at *Westminster*, by *Wynkyn de Worde*, in the year 1496. I think myself much obliged to Mr. *Haworth*, of *Chancery-lane*, not only for this but several other curious remarks.

' The carpe is a dayntous fishe, but there ben but fewe in *Englond*, and therefore I wryte the casse of him. For he is too stronge enarmyd in the mouthe that there may noo weke harnays hold hym. And as touchyne his baytes, I have but lytyll knoolege of it, and we were loth to wryte more than I know and have prouyd. But well I wote that the redde worm and the menow ben good baytyn for him at all tymes, as I have herd saye of perſones credyble, and also founde wryten in bokes of credence.

Russia

Russia wants these fish at this day; *Sweden* has them only in the ponds of the people of fashion; *Polish Prussia* is the chief seat of the carp; they abound in the rivers and lakes of that country, particularly in the *Frisch* and *Curisch-baff*, where they are taken of a vast size. They are there a great article of commerce, and sent in well-boats to *Sweden* and *Russia*. The merchants purchase them out of the waters of the *noblesse* of the country, who draw a good revenue from this article. Neither are there wanting among our gentry, instances of some who make good profit of their ponds.

The antients do not separate the carp from the sea fish. We are credibly informed that they are sometimes found in the harbor of *Dantzick*, between the town and a small place called *Hela*.

Carp are very long lived. *Gesner** brings an instance of one that was an hundred years old. They also grow to a very great size. On our own knowledge we can speak of none that exceeded twenty pounds in weight: but *Jovius*† says, that they were sometimes taken in the *Lacus Larius* (the *Lago di Como*) of two hundred pounds weight: and *Rzaczynski*‡, mentions others taken in the *Dniefter* that were five feet in length.

They are also extremely tenacious of life, and will live for a most remarkable time out of water. An experiment has been made by placing a carp in a net, well wrapped up in wet moss, the mouth only remaining out, and then hung up in a cellar, or some cool

* *Gesner pisc.* 312.

† *De piscibus Romanis*, 131.

‡ *Hist. Nat. Poloniae*, 142.

place:

place : the fish is frequently fed with white bread and milk, and is besides often plunged into water. Carp thus managed have been known, not only to have lived above a fortnight, but to grow exceedingly fat, and far superior in taste to those that are immediately killed from the pond*.

The carp is a prodigious breeder : its quantity of roe has been sometimes found so great, that when taken out and weighed against the fish itself, the former has been found to preponderate. From the spawn of this fish *Caviare* is made for the *Jews*, who hold this sturgeon in abhorrence. We have forbore in this work to enter into minute calculations of the numbers each fish may produce. It has already been most skilfully performed by Mr. *Harmer*, and printed in the *Philosophical Transactions* of the year 1767. We shall, in our Appendix, take the liberty of borrowing such part of his tables of the fecundity of fish, as will demonstrate the kind attention of Providence, towards the preserving so useful a class of animals for the service of its other creatures.

FORCUNDI-
TY.

These fish are extremely cunning, and on that account are by some styled the *river fox*. They will sometimes leap over the nets, and escape that way ; at others, will immerse themselves so deep in the mud, as to let the net pass over them. They are also very shy of taking a bait ; yet at the spawning time they are so simple, as to suffer themselves to be tickled, handled, and caught by any body that will attempt it.

This fish is apt to mix its milt with the roe of other fish, from

SPURIOUS
BREED.

* This was told me by a gentleman of the utmost veracity, who had twice made the experiment. The same fact is related by that pious Philosopher Doctor *Derham*, in his *Physico-Theology*, edit. 9th. 1737. *cb.* 1. *p.* 7. *n.* 6.

which

which is produced a spurious breed : we have seen the offspring of the carp and tench, which bore the greatest resemblance to the first: have also heard of the same mixture between the carp and bream.

DESCRIP. The carp is of a thick shape : the scales very large, and when in best season of a fine gilded hue.

The jaws are of equal length ; there are two teeth in the jaws, or on the tongue ; but at the entrance of the gullet, above and below, are certain bones that act on each other, and comminute the food before it passes down.

On each side of the mouth is a single beard ; above those on each side another, but shorter : the dorsal fin extends far towards the tail, which is a little bifurcated ; the third ray of the dorsal fin is very strong, and armed with sharp teeth, pointing downwards ; the third ray of the anal fin is constructed in the same manner.

267. BARBEL. *Barbus. Ausonius Mosella*, 94.

Barbeau. Belon, 299.

Barbus, Barbo. Salvian, 86.

Barbus. Rondel. fluviat. 194. *Gesner pisc.* 123.

Barbe, Barble. Schonevelds, 29.

Barbel. Wil. Ictb. 259. *Raii syn. pisc.* 121.

Cyprinus oblongus, maxilla superiore longiore, cirris quatuor, pinna ani ossiculorum septem. *Arist. synon.* 8.

Cyprinus Barbus. C. pinna ani radiis 7. cirris 4. pinnæ dorsi radio secundo utrinque serrato. Lin. syst. 525. *Gronov. Zooph. No.* 331.

Barbe, Barble. Wulff Boruss. No. 52.

THIS fish was so extremely coarse, as to be overlooked by the ancients till the time of *Ausonius*, and what he says is no panegyric



BARBEL.

negyric on it; for he lets us know it loves deep waters, and that when it grows old it was not absolutely bad.

*Laxos exerceo BARBE natatus,
Tu melior pejore ævo, tibi contigit uni
Spirantum ex numero non inlaudata senectus.*

It frequents the still and deep parts of rivers, and lives in society, rooting like swine with their noses in the soft banks. It is so tame as to suffer itself to be taken with the hand; and people have been known to take numbers by diving for them. In summer they move about during night in search of food, but towards autumn, and during winter, confine themselves to the deepest holes.

They are the worst and coarsest of fresh water fish, and seldom eat but by the poorer sort of people, who sometime boil them with a bit of bacon to give them a relish. The roe is very noxious, affecting those who unwarily eat of it with a nausea, vomiting, purging, and a slight swelling.

It is sometimes found of the length of three feet, and eighteen pounds in weight: it is of a long and rounded form: the scales not large. DESCRIP.

Its head is smooth: the nostrils placed near the eyes: the mouth is placed below: on each corner is a single beard, and another on each side the nose.

The dorsal fin is armed with a remarkable strong spine, sharply serrated, with which it can inflict a very severe wound on the incautious handler, and even do much damage to the nets.

The pectoral fins are of a pale brown color; the ventral and

VOL. III.

S f

anal

anal tipped with yellow: the tail a little bifurcated, and of a deep purple: the side line is strait.

The scales are of a pale gold color, edged with black: the belly is white.

167. TENCH. Tinca. *Aufonius Mesella*, 123.
 Tinca. *Jovius*, 124.
 Tinca, Tenca. *Salvian*, 90.
 La Tanche. *Belon*, 325.
 Tinca. *Rondel. fluviat.* 157. *Gesner pisc.* 984.
 Schley, Slye. *Schonevelds*, 76.
 Tench. *Wil. Ictb.* 251. *Raii syn. pisc.* 117.
 Cyprinus mucosus totus nigrescens, *extremitate caudæ aequali. Atted. synon.* 5.
 Cyprinus pinna anl radiis 25, cauda integra, corpore mucoso, cirris 2. *Lin. syst.* 526. *Gronov. Zooph.* No. 328.
 Suture, Linnare, Skomakare. *Fann. Suec. No.* 353.
 Schleie, Schleggen. *Wulff Boruss. No.* 55.

THE tench underwent the same fate with the barbel, in respect to the notice taken of it by the early writers; and even *Aufonius*, who first mentions it, treats it with such disrespect, as evinces the great capriciousness of taste; for that fish, which at present is held in such good repute, was in his days the repast only of the *Canaille*.

*Quis non et virides vulgi folatia Tincas
 Norit?*

It has been by some called the *Physician* of the fish, and that the slime is so healing, that the wounded apply it as a styptic. The ingenious Mr. *Diaper*, in his *piscatory* ecloges, says, that even the voracious

voracious pike will spare the tench on account of its healing powers :

*The Tench he spares a medicinal kind ;
For when by wounds distressed, or sore disease,
He courts the salutary fish for ease ;
Close to his scales the kind physician glides,
And sweats a healing balsam from his sides *.*

Whatever virtue its slime may have to the inhabitants of the water, we will not vouch for, but its flesh is a wholesome and delicious food to those of the earth. The *Germans* are of a different opinion. By way of contempt, they call it *Sboemaker*. *Gesner* even says, that it is insipid and unwholesome.

It does not commonly exceed four or five pounds in weight, but we have heard of one that weighed ten pounds; *Salvianus* speaks of some that arrived at twenty pounds.

They love still waters, and are rarely found in rivers: they are very foolish, and easily caught.

The tench is thick and short in proportion to its length: the scales are very small, and covered with slime. DESCRIP.

The irides are red: there is sometimes, but not always, a small beard at each corner of the mouth.

The color of the back is dusky; the dorsal and ventral fins of the same color: the head, sides, and belly, of a greenish cast, most beautifully mixed with gold, which is in its greatest splendor when the fish is in the highest season.

The tail is quite even at the end, and very broad.

* *Ecl.* II.

S f 2

Gobio.

168. GUD-
GEON.Gobio. *Aufonius Mofella*, 132.Gobio fluviatilis. *Salvian*, 214.Goujon de riviere. *Belon*, 322.Gobio fluviatilis. *Rondel. fluviat.* 206.*Gesner pisc.* 399.Gudgeon. *Wil. Ictb.* 264. *Raii syn.**pisc.* 123.Cyprinus quincuncialis maculosus, max-
illa superiore longiore cirris duobus
ad os. *Arted. synon.* 2.Cyprinus pinna ani radiis 2. *Lin.**Syst. Nat.* 526. *Gronow. Zooph.**No.* 329.

ARISTOTLE mentions the gudgeon in two places; once as a river fish, and again as a species that was gregarious: in a third place he describes it as a sea fish; we must therefore consider the *Koçes* he mentions, *lib.* IX. c. 2. and *lib.* VIII. c. 19. as the same with our species*.

This fish is generally found in gentle streams, and is of a small size: those few, however, that are caught in the *Kennet*, and *Cole*, are three times the weight of those taken elsewhere. The largest we ever heard of was taken near *Uxbridge*, and weighed half a pound.

They bite eagerly, and are assembled by raking the bed of the river; to this spot they immediately crowd in shoals, expecting food from this disturbance.

DESCRIP.

The shape of the body is thick and round: the irides tinged with red: the gill covers with green and silver: the lower jaw is shorter than the upper: at each corner of the mouth is a single beard: the back olive, spotted with black: the side line strait; the sides beneath that silvery: the belly white.

* The gudgeon is enumerated among the *Syrian* fish, by *Dr. Ruffel*, p. 75.

The

The tail is forked ; that, as well as the dorsal fin, is spotted with black.

** Without Beards.

La Bremme. *Belon*, 318. bus, pinna ani officulorum viginti sep- 169, BREAM.
 Cyprinus latus five Brama. *Rondel. flu-* tem. *Arted. synon.* 4.
viat. 154. *Gesner pisc.* 316, 317. Cyprinus Brama. *Lin. syst.* 531. *Gronov.*
 Brassein, Brachsem. *Schoneveldt*, 33. *Zooph. No.* 345.
 Bream. *Wil. Ictb.* 248. *Raii syn. pisc.* 116. Braxen. *Faun. Suec. No.* 360.
 Cyprinus pinnis omnibus nigrescenti- Gareikl. *Kram.* 391. Brekmen. *Wulff*
Borufi. No. 66.

THE bream is an inhabitant of lakes, or the deep parts of still rivers. It is a fish that is very little esteemed, being extremely insipid.

It is extremely deep, and thin in proportion to its length. The back rises very much, and is very sharp at the top. The head and mouth are small : on some we examined in the spring, were abundance of minute whitish tubercles ; an accident which *Pliny* seems to have observed befalls the fish of the *Lago Maggiore*, and *Lago di Como* *. The scales are very large : the sides flat and thin.

The dorsal fin has eleven rays, the second of which is the longest:

* *Duo Lacus ITALIÆ in radicibus Alpium, LARIUS et VERBANUS appellantur, in quibus pisces omnibus annis VERGILIARUM ortu existunt, squamis conspicui crebris atque præacutis, clavorum caligarium effigie: nec amplius quam circa eum mensem, videntur.* lib. IX. c. 18.

that.

that fin, as well as all the rest, are of a dusky color; the back of the same hue: the sides yellowish.

The tail is very large, and of the form of a crescent.

170. RUD. *Xapa?* *Athenæus*, lib. VIII. 355. *Ictb.* 252. *Raii syn. pisc.* 118.
Oppian Halient. I. 174. *Cyprinus!* *Arted. synon.* 6. No. 8.
La Plectia? *Belon*, 309. *La Rosse*, 319. *Cyprinus erythrophthalmus.* *Cyprinus*
Finscale. *Plot's Oxf.* 184. *pinna ani radiis 15. pinnis rubris.*
Rutilus latior, seu Rubellio fluviatilis *Lin. syst. Nat.* 530.
a Rud, Roud, or Finscale. *Wil. Sarf. Harf. Faun. Suec. No.* 366.

THIS fish is found in the *Charwell*, near *Oxford*, in the *Witban* in *Lincolnshire*, and in the fens in *Holdernefs*.

Its body is extremely deep, like that of the bream, but much thicker.

DESCRIP.

The head is small: the irides yellow, varying in some almost to redness: the nostrils large: the back vastly arched, and sloping off suddenly to the head and tail: the scales very large: the side line very slightly incurvated.

The dorsal fin consists of eleven rays; the first very short, the second very strong, and serrated on each side. The pectoral fins consist of seventeen; the ventral of nine; the anal of thirteen rays.

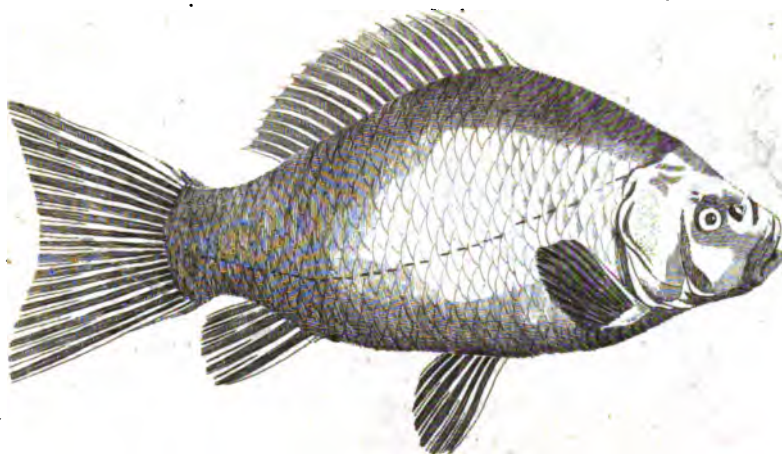
The back is of an olive color: the sides and belly of a gold color, with certain marks of red; the ventral and anal fins, and the tail, generally of a deep red: the tail forked.

We believe this to be the same with the *Shallow* of the *Cam*; which grows to the length of thirteen inches. It spawns in *April*.

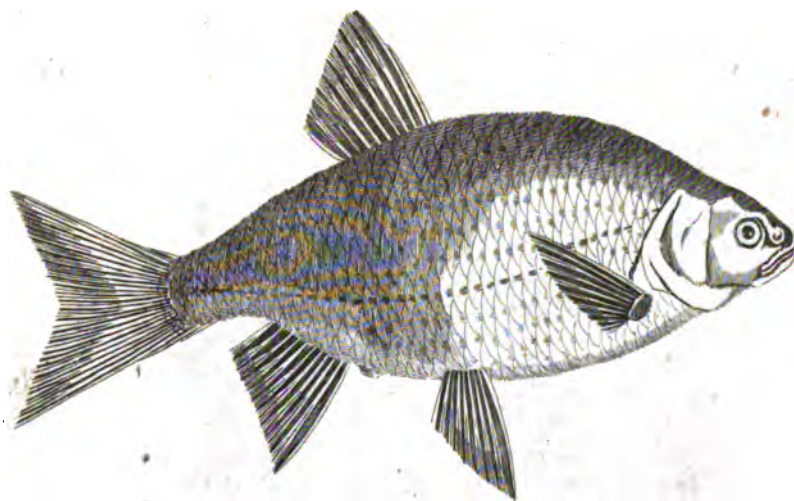
Cyprinus

PL. LXXXII.

Nº 171.



CRUSIAN.



RUD.

Nº 170.

Cyprinus Carassius. *Lin. syst.* Karauschen. *Meyer an.* XI. 58.
 Ruda, et Carussa. *Faun. Suec. N.* 364. Karals. *Gesner pisc. Paralip.* 16.

171. CRUCI-
AN.

THIS species is common in many of the fish ponds about *London*, and other parts of the south of *England*; but I believe is not a native fish.

It is very deep and thick: the back is much arched: the dorsal fin consists of nineteen rays; the two first strong and serrated. The pectoral fins have (each) thirteen rays; the ventral nine; the anal seven or eight: the lateral line parallel with the belly: the tail almost even at the end.

The color of the fish in general is a deep yellow: the meat is coarse, and little esteemed.

La Gardon, Roschie 2. en *Angleterre.* Cyprinus fargus dictus. Cyp. iride 172. ROACH.
Belon, 316. pinnis ventralibus ac ani plerumque
 Leuciscus. *Rondel. fluviat.* 191. rubentibus. *Arted. synon.* 9, 10.
 Rutilus five Rubellus fluviatilis. *Gesner* Cyprinus Rutilus. Cyp. pinna ani radiis
pisc. 820. 12. rubicunda. *Lin. syst.* 529.
 Rottaue. *Schonevolds*, 63. Mort. *Faun. Suec. No.* 372.
 Roche. *Wil. Ictb.* 262. Leuciscus Zert. *Wulff Boruss. No.* 59.
 prior. *Rondel.* 260. *Raii syn. pisc.* Altl. *Kram.* 395.
 122, 123.

SOUND as a *Roach*, is a proverb that appears to be but indifferently founded, that fish being not more distinguished for its vivacity

vivacity than many others; yet it is used by the *French* as well as us, who compare people of strong health to their *Gardon*, our roach.

It is a common fish, found in many of our deep still rivers, affecting, like the others of this genus, quiet waters. It is gregarious, keeping in large shoals. We have never seen them very large. Old *Walton* speaks of some that weighed two pounds. In a list of fish sold in the *London* markets, with the greatest weight of each, communicated to us by an intelligent fishmonger, is mention of one whose weight was five pounds.

The roach is deep, but thin, and the back is much elevated, and sharply ridged: the scales large, and fall off very easily. Side line bends much in the middle towards the belly.

373. DACE. Une vandoise, ou Dard. *Belon*, 313. gior, et angustior, pinna ani radio-
Leucisci secunda species. *Rondel.* 192. rum decem. *Arted. synon.* 9.
Gesner pisc. 26. Cyprinus leuciscus. Cyp. pinna ani
Dace, or Dare. *Wil. Ich.* 260. *Raii* radius 10. dorfali 9. *Lin. Syst.* 528.
syn. pisc. 121. *Laugele. Meyer's An.* II. tab. 97.
Cyprinus decem digitorum, rutilo lon-

THIS, like the roach, is gregarious, haunts the same places, is a great breeder, very lively, and during summer is very fond of frolicking near the surface of the water. This fish and the roach are coarse and insipid meat.

Its head is small: the irides of a pale yellow: the body long and slender: its length seldom above ten inches, though in the above-

abovementioned list is an account of one that weighed a pound and an half: the scales smaller than those of the roach.

The back is varied with dusky, with a cast of yellowish green: the sides and belly silvery: the dorsal fin dusky: the ventral, anal, and caudal fins red, but less so than those of the former: the tail is very much forked.

The Graining. *Voy. to the Hebrides*, 11.

174. GRAIN-
ING.

THE *Graining* is found in the *Mersey* near *Warrington*: has much the resemblance of a dace, but is more slender, and the back straiter. The usual length about seven inches and a half. The depth to the length of this is as one to five, of the dace as one to four. The color of the back is silvery, with a bluish cast. The eyes, ventral, and anal fins are red, but paler than those of the dace. The pectoral fin redder.

175. **CHUB.** Capito. *Auson. Mosella*, 85.
 Squalus, Squaglio. *Salvian*, 84.
 Le chevesne, Testard, Vilain. *Belon*,
 315.
 Cephalus fluviatilis. *Randel. fluviat.*
 190.
 Capito five Cephalus fluviatilis. *Gesner*
pisc. 182.
 Chub, or Chevin. *Wil. Ichth.* 255.
Raii syn. pisc. 119.
 Cyprinus oblongus macrolepidotus, pinna
 ani officulorum undecim. *Aried.*
synon. 7.
 Cyprinus cephalus. *Cyp.* pinna ani
 radiis undecim, cauda integra, cor-
 pore subcylindrico. *Lin. syst.* 527.
Gronov. Zooph. No. 339.
 Alte. *Meyer's An.* II. tab. 92.
 Rapen. *Wulff Beruss.* No. 56.

SALVIANUS imagines this fish to have been the *Squalus** of the antients, and grounds his opinion on a supposed error in a certain passage in *Columella* and *Varro*, where he would substitute the word *Squalus* instead of *Scarus*: *Columella* says no more than that the old *Romans* payed much attention to their stews, and kept even the sea fish in fresh water, paying as much respect to the *Mullet* and *Scarus* as those of his days did to the *Muræna* and *Bass*.

That the *Scarus* was not our *Chub*, is very evident; not only because the *Chub* is entirely an inhabitant of fresh waters, but likewise it seems improbable that the *Romans* would give themselves any trouble about the worst of river fish, when they neglected the most delicious kinds; all their attention was directed towards those of the sea: the difficulty of procuring them seems to have been the criterion of their value, as is ever the case with effete luxury.

* A cartilaginous fish, a shark. *Vide Plin. lib. IX. c. 24.* *Ovid* also ranks his *Squalus* with the sea fish.

Et SQUALUS, et tenui suffusus sanguine MULLUS. Halieut. 147.

The

PL. XXXIII.

CHUB.



PL. 175.

BLEAK.



PL. 176.

The chub is a very coarse fish and full of bones : it frequents the deep holes of rivers, and during summer commonly lies on the surface, beneath the shade of some tree or bush. It is a very timid fish, sinking to the bottom on the least alarm, even at the passing of a shadow, but they will soon resume their situation. It feeds on worms, caterpillars, grasshoppers, beetles, and other coleopterous insects that happen to fall into the water ; and it will even feed on cray-fish. This fish will rise to a fly.

This fish takes its name from its head, not only in our own, but in other languages : we call it *Chub*, according to *Skinner*, from the old *English*, *Cop*, a head ; the *French*, *Tesard* ; the *Italians*, *Capitone*.

It does not grow to a large size ; we have known some that weighed above five pounds, but *Salvianus* speaks of others that were eight or nine pounds in weight.

The body is oblong, rather round, and of a pretty equal thickness the greatest part of the way : the scales are large.

The irides silvery ; the cheeks of the same color : the head and back of a deep dusky green : the sides silvery, but in the summer yellow : the belly white : the pectoral fins of a pale yellow : the ventral and anal fins red : the tail a little forked, of a brownish hue, but tinged with blue at the end.

276. BLEAK. *Alburnus*. *Aufon. Mafella*, 126.
 Able ou Ablette. *Belon*, 319.
Alburnus. *Rondel. Fuvias*. 208. *Gefner*
pisc. 23;
Albula minor. Witinck, Witek and
 Blike. *Schauswilde*, II. Tab. 1.
 Bleak. *Wil. Ich.* 263. *Raii syn. pisc.*
 123.
Cyprinus quincuncialis, pinna ani offi-
 colorum viginti. *Arsed. synon.* 10.
Cyprinus alburnus. *Lin. fish.* 531.
Gronov. Zooph. No. 336.
 Loja. *Fann. Suec.* No. 373.
 Spitzlauben, *Schneiderichl.* *Kran.*
 395.
 Ukeleyen. *Wulf Borusi.* No. 64.

THE taking of these, *Aufonius* lets us know, was the sport of children,

ALBURNOS prædam puerilibus hamis.

They are very common in many of our rivers, and keep together in large shoals. These fish seem at certain seasons to be in great agonies; they tumble about near the surface of the water, and are incapable of swimming far from the place, but in about two hours recover, and disappear. Fish thus affected the *Thames* fishermen call *mad bleaks*. They seem to be troubled with a species of *Gordius* or hair-worm, of the same kind with those which *Aristotle** says that the *Ballerus* and *Tillo* are infested with, which torments them so that they rise to the surface of the water and then die.

ARTIFICIAL PEARLS.

Artificial pearls are made with the scales of this fish, and we think of the dace. They are beat into a fine powder, then diluted with water, and introduced into a thin glass bubble, which is af-

* *Hist. an. lib.* VIII. c. 20.

terwards

CLASS IV.

B L E A K.

terwards filled with wax. The *French* were the inventors of art. Doctor *Lisfer* * tells us, that when he was at *Paris*, a carter used in one winter thirty hampers full of fish in this manufacture.

The bleak seldom exceeds five or six inches in length: the body is slender, greatly compressed sideways, not unlike the sprat.

The eyes are large: the irides of a pale yellow: the under fin the longest: the lateral line crooked: the gills silvery: the head green: the sides and belly silvery: the fins pellucid: the scales fall off very easily: the tail much forked.

During the month of *July* there appear in the *Thames*, at *Blackwall* and *Greenwich*, innumerable multitudes of small fish, which are known to the *Londoners* by the name of *White Bait*. They are esteemed very delicious when fried with fine flour, and on occasion, during the season, a vast resort of the lower order of people resorts to the taverns contiguous to the places they are taken at.

There are various conjectures about this species, but all terminate in a supposition that they are the fry of some fish, but they do not agree to which kind they owe their origin. Some attribute it to the shad, others to the sprat, the smelt, and the bleak. That the fry neither belong to the shad, nor the sprat, is evident from the number of branchiostegous rays, which in those are eight, in this only three. That they are not the young of smelts is as clear, because they want the *pinna adiposa*, or rayless fin; and that they are the offspring of the bleak is extremely probable, since we never heard of the white bait being found in any other river, notwithstanding


* Journey to *Paris*, 142.

standing the bleak is very common in several of the *British* streams: but as the white bait bears a greater similarity to this fish than to any other we have mentioned, we give it a place here as an appendage to the bleak, rather than form a distinct article of a fish which it is impossible to class with certainty.

It is evident that it is of the carp or *Cyprinus* genus: it has only three branchiostegous rays, and only one dorsal fin; and in respect to the form of the body is compressed like that of the bleak.

Its usual length is two inches: the under jaw is the longest: the irides silvery, the pupil black: the dorsal fin is placed nearer to the head than to the tail, and consists of about fourteen rays: the side line is strait: the tail forked, the tips black.

The head, sides, and belly are silvery; the back tinged with green.

177. MINOW.  *Arist. Hist. an. VI. c. 13.*
 Le Veron. *Belon*, 324.
Pisciculus varius. Rondel. fluviat. 205.
Phoscium qui vulgo *veronus* (quasi varius) dicitur, *Bellonius. Gesner pisc.* 715.
 Elritze, Elderitze. *Schonevelde*, 57.
 Pink, Minim, or Minow. *Wil. Ictb.*

268. *Raii syn. pisc.* 125.
Cyprinus tridactylus varius oblongus teretiusculus, pinna ani ossiculorum octo. Arist. synom. 12.
Cyprinus Phoxinus. Cyp. pinna ani radiis 8. macula fusca ad caudam, corpore pellucido. Lin. syst. 528.

THIS beautiful fish is frequent in many of our small gravelly streams, where they keep in shoals.

The body is slender and smooth, the scales being extremely small. It seldom exceeds three inches in length.

The

The lateral line is of a golden color: the back flat, and of a deep olive: the sides and belly vary greatly in different fish; in a few are of a rich crimson, in others bluish, in others white. The tail is forked, and marked near the base with a dusky spot.

Kingo, the Gold Fish. *Kämpfer Hist. Jap.* I. 137. *syn. Faun. Succ. tab 2. Gro- 178. GOLD-
now. Zooph. No. 342, EN.
Kin-yu. Du Halde Hist. China. I. 19. Gold Fish. Edw. 209.
315. Kin-yu, five carpio auratus. *Baßer
Cyprinus auratus. Cyp. pinna ani ge- subsec. II. 78.
mina, cauda transversa bifurca. Lin.**

THESE fish are now quite naturalized in this country, and breed as freely in the open waters as the common carp.

They were first introduced into *England* about the year 1691, but were not generally known till 1728, when a great number were brought over, and presented first to Sir *Mathew Dekker*, and by him circulated round the neighborhood of *London*, from whence they have been distributed to most parts of the country.

In *Cbina* the most beautiful kinds are taken in a small lake in the province of *Che-Kyang*. Every person of fashion keeps them for amusement, either in porcellane vessels, or in the small basons that decorate the courts of the *Cbinese* houses. The beauty of their colors, and their lively motions, give great entertainment, especially to the ladies, whose pleasures, by reason of the cruel policy of that country, are extremely limited.

In form of the body they bear a great resemblance to a carp. They have been known in this island to arrive at the length of eight inches;

inches; in their native place they are said * to grow to the size of our largest herring.

The nostrils are tubular, and form sort of appendages above the nose: the dorsal fin and the tail vary greatly in shape: the tail is naturally bifid, but in many is trifid, and in some even quadrifid: the anal fins are the strongest characters of this species, being placed not behind one another like those of other fish, but opposite each other like the ventral fins.

The colors vary greatly; some are marked with a fine blue, with brown, with bright silver; but the general predominant color is gold of a most amazing splendor; but their colors and form need not be dwelt on, since those who want opportunity of seeing the living fish, may survey them expressed in the most animated manner, in the works of our ingenious and honest friend Mr. *George Edwards*.

* *Du Halde*, 316..

A P P E N D I X.

Vol. III.

U u

A P P E N D I X.

THE late Bishop of *Carlisle* informed me that a tortoise was taken off the coast of *Scarborough* in 1748 or 1749. It was purchased by a family at that time there, and a good deal of company invited to partake of it. A gentleman, who was one of the guests, told them it was a *Mediterranean* turtle, and it was whole some: only one of the company eat of it, and it almost killed him, being seized with a dreadful vomiting and purging.

Since the printing of that article I have been favored with several very curious accounts of this reptile, which will give greater light into its natural history than I am capable of, from a most unphilosophical but invincible aversion to the whole genus. The facts that will appear in the following lines serve to confirm my opinion of its being an innoxious animal, and, I hope, will serve to free numbers from a panic that is carried to a degree of infelicity, and a

to redeem it from a persecution which the unmerited ill-opinion the world has conceived, perpetually exposes it to.

The gentlemen I am principally indebted to for my informations are *J. Arscott*, Esq; of *Tebott*, in *Devonshire*, and *Mr. Pitfield*, of *Exeter*. Some of these accounts were addressed to *Doctor Milles*, Dean of *Exeter*; others to the worthy Prelate above-mentioned, to whom I owe these and many other agreeable correspondencies; others again to myself.

Mr. Arscott's letters give a very ample history of the nature of the toad: they were both addressed to *Doctor Milles*, and both were the result of certain queries I proposed, which the former was so obliging as to give himself the trouble of answering in a most satisfactory manner.

I shall first take the liberty of citing *Mr. Arscott's* letter of *September* the 23d, 1768, which mentions some very curious particulars of this innocent reptile, which, for such a number of years, found an asylum from the good sense of a family which soared above all vulgar prejudices.

“ It would give me the greatest pleasure to be able to inform you
 “ of any particulars worthy *Mr. Pennant's* notice, concerning the
 “ toad who lived so many years with us, and was so great a favorite.
 “ The greatest curiosity in it was its becoming so remarkably
 “ tame. It had frequented some steps before the hall-door some
 “ years before my acquaintance commenced with it, and had been
 “ admired by my father for its size (which was of the largest I ever
 “ met with) who constantly payed it a visit every evening. I
 “ knew it myself above thirty years, and by constantly feeding it;
 “ brought it to be so tame that it always came to the candle, and
 “ looked up as if expecting to be taken up and brought upon the
 “ table,

“ table, where I always fed it with insects of all sorts: it was fond-
 “ est of flesh maggots, which I kept in bran; it would follow
 “ them, and when within a proper distance, would fix its eye, and
 “ remain motionless for near a quarter of a minute, as if preparing
 “ for the stroke, which was an instantaneous throwing its tongue
 “ at a great distance upon the insect, which stuck to the tip by a
 “ glutinous matter: the motion is quicker than the eye can follow*.

“ I always imagined that the root of its tongue was placed in the
 “ fore part of its under jaw, and the tip towards its throat, by
 “ which the motion must be a half circle; by which, when its
 “ tongue recovered its situation, the insect at the tip would be
 “ brought to the place of deglutition. I was confirmed in this
 “ by never observing any internal motion in its mouth, excepting
 “ one swallow the instant its tongue returned. Possibly I might be
 “ mistaken, for I never dissected one, but contented myself with
 “ opening its mouth, and slightly inspecting it.

“ You may imagine that a toad generally detested (altho' one of
 “ the most inoffensive of all animals) so much taken notice of and
 “ befriended, excited the curiosity of all comers to the house, who
 “ all desired to see it fed, so that even ladies so far conquered the
 “ horrors instilled into them by nurses, as to desire to see it. This
 “ produced innumerable and improbable reports, making it as
 “ large as the crown of a hat, &c. &c. This I hope will account
 “ for my not giving you particulars more worth your notice.
 “ When I first read the account in the papers of toads sucking
 “ cancerous breasts, I did not believe a word of it, not thinking it.

* This rapid capture of its prey might give occasion to the report of its fasci-
 nating powers. *Linnaeus says, Insecta in fauces fascino revocat.*

“ possible.

“ possible for them to suck, having no lips to embrace the part,
 “ and a tongue so oddly formed ; but as the fact is thoroughly ve-
 “ rified, I most impatiently long to be fully informed of all parti-
 “ culars relating to it.”

Notwithstanding these accounts will serve to point out some errors I had adopted, in respect to this reptile in my first sheet, yet it is with much pleasure I lay before the public a more authentic history, collected from Mr. *Arscott's* second favor ; the answer points out my queries, which it is needless to repeat.

Tebell, Nov. 2, 1768.

“ In respect to the queries, I shall here give the most satisfactory
 “ answers I am capable of.

“ First, I cannot say how long my father had been acquainted
 “ with the toad before I knew it ; but when I first was acquainted
 “ with it, he used to mention it as the old toad I've known so many
 “ years ; I can answer for thirty-six years.

“ Secondly, No toads that I ever saw appeared in the winter
 “ season. The old toad made its appearance as soon as the warm
 “ weather came, and I always concluded it retired to some dry
 “ bank to repose till the spring. When we new-lay'd the steps I
 “ had two holes made in the third step on each, with a hollow of
 “ more than a yard long for it, in which I imagine it slept, as it
 “ came from thence at its first appearance.

“ Thirdly, It was seldom provoked : neither that toad (nor the
 “ multitudes I have seen tormented with great cruelty) ever shewed
 “ the least desire of revenge, by spitting or emitting any juice from
 “ their pimples. Sometimes upon taking it up it would let out a
 “ great quantity of clear water, which, as I have often seen it do
 “ the

“ the same upon the steps when quite quiet, was certainly its urine,
 “ and no more than a natural evacuation.

“ Fourthly, A toad has no particular enmity for the spider; he
 “ used to eat five or six with his millepedes (which I take to be its
 “ chief food) that I generally provided for it, before I found out
 “ that flesh maggots, by their continual motion, was the most
 “ tempting bait; but when offered it eat blowing flies and humble
 “ bees that come from the rat-tailed maggot in gutters, or in short
 “ any insect that moved. I imagine if a bee was to be put before
 “ a toad, it would certainly eat it to its cost; but as bees are sel-
 “ dom stirring at the same time that toads are, they can seldom
 “ come in their way, as they seldom appear after sun-rising, or be-
 “ fore sun-set. In the heat of the day they will come to the mouth
 “ of their hole, I believe, for air. I once from my parlour window
 “ observed a large toad I had in the bank of a bowling-green,
 “ about twelve at noon, a very hot day, very busy and active upon
 “ the grass; so uncommon an appearance made me go out to see
 “ what it was, when I found an innumerable swarm of winged ants
 “ had dropped round his hole, which temptation was as irresistible
 “ as a turtle would be to a luxurious alderman.

“ Fifthly, Whether our toad ever propagated its species I know
 “ not, rather think not, as it always appeared well, and not lessen-
 “ ed in bulk, which it must have done, I should think, if it had
 “ discharged so large a quantity of spawn as toads generally do.
 “ The females that are to propagate in the spring, I imagine, in-
 “ stead of retiring to dry holes, go into the bottom of ponds, and
 “ lay torpid among the weeds; for to my great surprize in the
 “ middle of the winter, having for amusement put a long pole into
 “ my pond, and twisted it till it had gathered a large volume of
 weed,

“weed, on taking it off I found many toads, and having cut some
 “asunder with my knife, by accident, to get off the weed, found
 “them full of spawn not thoroughly formed. I am not positive,
 “but think there were a few males in *March*: I know there are
 “thirty males * to one female, twelve or fourteen of whom I have
 “seen clinging round a female: I have often disengaged her, and
 “put her to a solitary male, to see with what eagerness he would
 “seize her. They impregnate the spawn as it is drawn † out in
 “long

* Mr. John Hunter has assured me, that during his residence at *Belkisle*, he dissected some hundreds of toads, yet never met with a single female among them.

† I was incredulous as to the *obstetrical* offices of the male toad, but since the end is so well accounted for, and the fact established by such good authority, belief must take place.

Mr. *Demours*, in the *Memoirs of the French Academy*, as translated by Dr. *Templeman*, vol. I. 371. has been very particular in respect to the male toad, as acting the part of an *Accoucheur*; his account is curious, and claims a place here:

“In the evening of one of the long days in summer, Mr. *Demours* being in
 “the King’s garden perceived two toads *coupled together* at the edge of an hole,
 “which was formed in part by a great stone at the top.

“Curiosity drew him to see what was the occasion of the motions he observed,
 “when two facts equally new surprized him; the *first* was the extreme difficulty
 “the female had in laying her eggs, insomuch that she did not seem capable of
 “being delivered of them without some assistance. The *second* was, that the
 “male was mounted on the back of the female, and exerted all his strength
 “with his hinder feet in pulling out the eggs, whilst his fore-feet embraced her
 “breast.

“In order to apprehend the manner of his working in the delivery of the female, the reader must observe, that the paws of these animals, as well those
 “of

“ long strings, like a necklace, many yards long, not in a large
 “ quantity of jelly, like frogs spawn. *N. B.* After having held a
 “ female some time in my hand, I have, to try if there was any
 “ smell, put my finger a foot under water to a male, who has im-
 “ mediately seized it, and stuck to it as firmly as if it was a female.
 “ *Quere*, Would they seize a finger or rag that had touched a
 “ cancerous ulcer ?

“ Sixthly, Insects being their food, I never saw any toad shew
 “ any liking or dislike to any plant*.

“ Seventhly,

“ of the fore-feet as of the hinder, are divided into several toes, which can per-
 “ form the office of fingers.

“ It must be remarked likewise, that the eggs of this species of toads are in-
 “ cluded each in a membranous coat that is very firm, in which is contained the
 “ embryo ; and that these eggs, which are oblong and about two lines in
 “ length, being fastened one to another by a short but very strong cord, form a
 “ kind of chaplet, the beads of which are distant from each other about the half
 “ of their length. It is by drawing this cord with his paw that the male per-
 “ forms the function of a midwife, and acquits himself in it with a dexterity
 “ that one would not expect from so lumpish an animal.

“ The presence of the observer did not a little discompose the male ; for some
 “ time he stopped short, and threw on the *curious impertinent* a fixed look that
 “ marked his disquietness and fear ; but he soon returned to his work with more
 “ precipitation than before, and a moment *after* he appeared undetermined whe-
 “ ther he should continue it or not. The female likewise discovered her uneasi-
 “ ness at the sight of the stranger, by motions that interrupted sometimes the
 “ male in his operation. At length, whether the silence and steady posture of
 “ the spectator had dissipated their fear, or that the *case* was urgent, the male
 “ resumed his work with the same vigour, and successfully performed his func-
 “ tion.”

* This question arose from an assertion of *Linnaeus*, that the toad delighted in
 filthy herbs. *Delectatur Cotula, Aëæa, Stachyde fatidi.* The unhappy deformity
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“Seventhly, I hardly remember any persons taking it up except my father and myself: I do not know whether it had any particular attachment to us.

“Eightly, In respect to its end, I answer this last quere. Had it not been for a tame raven, I make no doubt but it would have been now living; who one day seeing it at the mouth of its hole, pulled it out, and although I rescued it, pulled out one eye, and hurt it so, that notwithstanding its living a twelvemonth it never enjoyed itself, and had a difficulty of taking its food, missing the mark for want of its eye: before that accident had all the appearance of perfect health.”

What Mr. *Pitfield* communicated to me serves farther to evince the patient and and pacific disposition of this poor animal. If I am thought to dwell too long on the subject, let it be considered, that those who have most unprovoked enemies, and fewest friends, clame the greatest pity, and warmest vindication. This reptile has undergone all sorts of scandal; one author makes it the companion of an atheist*; and *Milton*† makes the devil itself its inmate; in a word, all kind of evil passions have been bestowed on it: It is but justice therefore to say something in behalf of an animal that has of late had so many trials of its temper, from experiments occasioned by the new discovery of its cancer-sucking qualities. It has born all the handling, teizing, bagging, &c. &c. without the

mity of the animal seems to be the only ground of this as well as another misrepresentation, of its conveying a poison with its pimples, its touch, and even its breath. *Verrucæ lactescentes ventnatæ infusæ tactu, anhelitu.*

* A great toad was said to have been found in the lodgings of *Vanini*, at *Toulousé*. *Vide Johnson's Shakespear.*

† *Paradise Lost.*

left

left sign of a vindictive disposition; but has even made itself a sacrifice to the discharge of its office: this I know from the result of much enquiry; would I could contradict what is asserted, of the inefficacy of the tryals made of them in the most horrible of diseases; for at this time I myself cannot bring one proof of the success. But I would not have any one discouraged from the pursuit of the remedy. Heaven opens to us gradually its favors: the *loadstone* was for ages a meer matter of ignorant amaze at its attractive qualities: *mercury* was a supposed poison, and the terror of physicians: we now wonder at the powers of electricity, and are still but partially acquainted with its uses: the toad, the object of horror even in the most enlightened times, is found to be perfectly innocent; it has certainly contributed to the ease (and as has been said to the cure) of the unhappy cancered; let the following facts speak for themselves; they come from persons of undoubted veracity, and will sufficiently establish the truth of the beneficent qualities of this animal.

The first paper relating to it is very ingeniously drawn up by Mr. *Pitfield*, for the information of Doctor *Littleton*, Bishop of *Carlisle* (now happy) who immediately honored me with the copy.

Exon, August 29, 1768.

“ Your lordship must have taken notice of a paragraph in the
 “ papers, with regard to the application of toads to a cancered
 “ breast. A patient of mine has sent to the neighborhood of *Hun-*
 “ *gerford*, and brought down the very woman on whom the cure
 “ was done. I have, with all the attention I am capable of, at-
 “ tended the operation for eighteen or twenty days, and am sur-

X x 2

“ prized

“prized at the phænomenon. I am in no expectation of any great
 “service from the application : the age, constitution, and thorough-
 “ly cancerous condition of the person, being unconquerable bar-
 “riers to it. How an ail of that kind, absolutely local, in an
 “otherwise sound habit, and of a likely age, might be relieved, I
 “cannot say. But as to the operation, thus much I can assert,
 “that there is neither pain nor nausea in it. The animal is
 “put into a linen bag, all but its head, and that is held to the
 “part. It has generally instantly laid hold of the foulest part of
 “the sore, and sucked with greediness until it dropped off dead.
 “It has frequently happened that the creature has swollen immen-
 “sely, and from its agonies appeared to be in great pain. I have
 “weighed them for several days together, before and after the ap-
 “plication, and found their increase of weight, in the different de-
 “grees, from a drachm to near an ounce. They frequently sweat
 “exceedingly, and turn quite pale : sometimes they disgorge, re-
 “cover, and become lively again. I think the whole scene is sur-
 “prising, and a very remarkable piece of natural history. From
 “the constant inoffensiveness which I have observed in them, I al-
 “most question the truth of their poisonous spitting. Many people
 “here expect no great good from the application of toads to can-
 “cers ; and where the disorder is not absolutely local, none is to be
 “expected ; where it is, and seated in any part, not to be well
 “come at for extirpation, I think it is hardly to be imagined, but
 “that the having it sucked clean as often as you please, must give
 “great relief. Every body knows, that dogs licking of sores cures
 “them, which is, I suppose, chiefly by keeping them clean. If
 “there is any credit to be given to history, poisons have been suck-
 “ed out,

Pallentia

—*Pallentia Vulnere lambit*
Ore Venena trabens.

“ are the words of *Lucan* on the occasion: if the people to whom
 “ these words are applied, did their cure by immediately following
 “ the injection of the poison, the local confinement of another
 “ poison brings the case to a great degree of similarity.

“ I hope I have not tired your lordship with my long tale, as it
 “ is a true one, and in my apprehension a curious piece of natural
 “ history, I could not forbear communicating it to you. I own I
 “ thought the story in the papers to be an invention, and when I
 “ considered the instinctive principle in all animals of self preservation,
 “ I was confirmed in my disbelief; but what I have related I
 “ saw, and all theory must yield to fact. It is only the *Rubeta*,
 “ the land toad, which has the property of sucking; I cannot find
 “ any the least mention of the property in any one of the old naturalists.
 “ My patient can bear to have but one applied in twenty-four hours: the woman who was cured had them on day and
 “ night, without intermission, for five weeks. Their time of hanging
 “ at the breast has been from one to six hours.”

The other is of a woman who made the experiment, which I give, as delivered to me from undoubted authority.

About six years * ago a poor woman received a crush on her breast by the fall of a pail; a complaint in that part was the result.

Last year her disorder increased to an alarming degree; she had five wounds on her breasts, one exceeding large, from which frag-

* *i. e.* from 1769.

ments of bone worked out, giving her vast pain; and at the same time there was a great discharge of thin yellow matter: she was likewise reduced to a meer skeleton.

All her left side and stomach was much swelled; her fingers doughy and discolored.

On the 25th of *September*, 1768, the first toad was applied; between that and the 29th she used seven, and had that night better rest. She swallowed with greater ease, for before that time there was some appearance of tumor in her neck, and a difficulty of getting any thing down.

October 16th, the patient better. It was thought proper as winter was coming on, and of course it would be very difficult to procure a number of toads, to apply more at a time, so three were put on at once. The swelling in the arm abated, and the woman's rest was good.

During these tryals she took an infusion of *Water Parsnep* with *Pulvis Cornacchini*.

December 18th, continued to look ill, but finds herself better: two of the wounds were now healed.

She was always most easy when the toads were sucking, of which she killed vast numbers in the operation.

January 1769. The last account that was received, informing that the patient was better.

The remarks made on the animals are these:

Some toads died very soon after they had sucked; others lived about a quarter of an hour, but some lived much longer: for example, one that was applied about seven o'clock sucked till ten, and died as soon as it was taken from the breast; another that immediately succeeded continued till three o'clock, but dropped dead from

from the wound, each swelled exceedingly, and turned of a pale color.

These toads did not seem to suck greedily, and would often turn their heads away; but during the time of sucking were heard to smack their lips like a young child.

As those reptiles are apt by their struggles to get out of the bag, the open end ought to be made with an open hem, that the string may run the more readily, and fasten tightly about the neck.

It would be improper to quit the subject without mentioning the origin of this strange discovery, which was owing to a woman near *Hungerford*, who labored under a cancerous complaint in her breast, which had long baffled all applications.

The account she gives of the manner in which she came by her knowledge is singular, and I may say apocryphal. She says of herself, that in the height of her disorder she went to some church where there was a vast crowd: on going into a pew, she was accosted by a strange clergyman, who, after expressing compassion for her situation, told her that if she would make such an application of living toads* as abovementioned, she would be well.

This dark story is all we can collect relating to the affair. It is our opinion that she stumbled upon the discovery by accident, and that having set up for a cancer doctress, she thought it necessary to

* I have been told that she not only made use of living toads, but permitted the dead ones to remain at her breast, by way of cataplasms, for some weeks.

I have been informed that the relation of this strange method of cure was brought over a few years ago by one of our foreign ministers; and that there is also notice taken of it in *Wheeler's Travels*.

amuse

amuse the world with this mysterious relation *. For it seems very unaccountable, that this unknown gentleman should express so much tenderness for this single sufferer, and not feel any for the many thousands that daily languish under this terrible disorder: would he not have made use of this invaluable nostrum for his own emolument, or at least, by some other means have found a method of making it public for the good of mankind?

Here I take leave of the subject, which I could not do without expressing my doubts, as to the method of the woman's obtaining her information; but in respect to the authenticity of this new-discovered property of the toad, facts establish it beyond dispute. Let the humane wish for speedy proofs of the efficacy; and for the satisfaction of the world, let those who are capable of giving indisputable proofs of the success, take the earliest opportunity of making the public acquainted with so interesting an affair.

'I have now given without alteration the whole of the facts as stated in my former edition. They are too curious to be lost; as they may serve to give to after-times a proof of the belief of the age, and the fair trial made of a most distastful remedy in the most dreadful of complaints.'

GLAIN
NEIDE, 30.

This reminds me of another *Welsh* word that is explanatory of the customs of the antients, shewing their intent in the use of the

* Mr. *Valentine Greatraks*, who about the year 1664, persuaded himself that he could cure diseases, by stroking them out of the parts affected with his hand; and the famous *Bridget Bostock*, of *Cheshire*, who worked cures by virtue of her fasting spittle, both came by their art in a manner supernatural, but by *faith* many were made whole.

plant

plant *Vervaine* in their lustrations; and why it was called by *Dioscorides Hierobotane*, or the sacred plant, and esteemed proper to be hung up in their rooms.

The *British* name *Cas gan Cytbrawl*, or the Devil's aversion, may be a modern appellation, but is likewise called *Y Dderwen fendigaid*, the holy oak, which evidently refers to the *Druids* groves.

Pliny informs us, that the *Gauls* used it in their incantations, as the *Romans* and *Greeks* did in their lustrations. *Terence*, in his *Andria*, shews us the *Verbena* was placed on altars before the doors of private houses in *Athens*; and from the same passage in *Pliny**, we find the *Magi* were guilty of the most extravagant superstition about this herb. Strange it is that such a veneration should arise for a plant endued with no perceptible qualities; and stranger still it should spread from the farthest north to the boundaries of *India*. So general a consent, however, proves the custom arose before the different nations had lost all communication with each other.

Her Grace the Dutchess Dowager of *PORTLAND* did me the honor of communicating the following species.

This is a new kind of *SUCKER* found near *Weymouth*, which ought to be placed after No. 59. and may be called the

THE HEAD is flat and tumid on each side. The BODY taper.

The PECTORAL fins placed unusually high. It has only one DORSAL fin; placed low, or near the tail.

BIMACU-
LATED.

* *Lib. XXV. cap. 9.*

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Y y

The

The TAIL is even at the end.

The color of the head and body is of a fine pink : of the fins whitish. On each side of the engine of adherence on the belly, is a round black spot.

It is figured in Plate XXII. of the natural size.

Another will add a new genus to the *British* fish, being of that which *Linnaeus* calls *Ophidium*. It must find a place after the LAUNCE, *Sand Eel* or *Ammodytes*, under the trivial name of

BEARDLESS. *Ophidium imberbe*. *Lin. Syst.* 431. *Fann. Suac*, No 319.

Ophidium flavum et imberbe. *Schonevelds*, 53? *Wil. Leth.* 113. *Raii* *syn.* *pisc.* 39.

THIS was taken at the same place with the former. I have not at this time had opportunity of describing it, therefore am obliged to refer the reader to the writers above cited for the description.

No.

No. II.

OF THE PROLIFICNESS OF FISH.

Fish.	Weight.		Weight of Spawn.	Fecundity.	Time.
	oz.	dr.			
Carp	25.	5.	2571.	203109.	April 4.
Codfish			12540.	3686760.	Dec. 23.
Flounder	24.	4.	2200.	1357400.	March 14.
Herring	5.	10.	480.	36960.	Oct. 25.
Mackrel	18.	0.	1223 $\frac{1}{4}$.	546681.	June 18.
Perch	8.	9.	765 $\frac{1}{4}$.	28323.	April 5.
Pike	56.	4.	5100 $\frac{1}{4}$.	49304.	April 25.
Roach	10.	6 $\frac{1}{2}$.	361.	81586.	May 2.
Smelt	2.	0.	149 $\frac{1}{2}$.	38278.	March 21.
Sole	14.	8.	542 $\frac{1}{4}$.	100362.	June 13.
Tench	40.	0.		383252*.	May 28.

* Some part of the spawn of this fish was by accident lost, so that the account here is below the reality. *Vide Phil. Trans.* 1767.

No.

No. III.

OF THE METHOD OF MAKING ISINGLASS IN ICELAND,
FROM THE SOUNDS OF COD AND LING.

THE sounds of cod and ling bear general likeness to those of the *Sturgeon* kind of *Linnaeus* and *Artedi*, and are in general so well known, as to require no particular description. The *New-found land* and *Iceland* fishermen split open the fish as soon as taken, and throw the back-bones, with the sounds annexed, in a heap; but previous to putrefaction, the sounds are cut out, washed from their slimes, and salted for use. In cutting out the sounds, the parts between the ribs are left behind, which are much the best; the *Iceland* fishermen are so sensible of this, that they beat the bones upon a block with a thick stick, till the *Pockets*, as they term them, come out easily, and thus preserve the sound entire. If the sounds have been cured with salt, that must be dissolved by steeping them in water, before they are prepared for *Isinglass*. The fresh sound must then be laid upon a block of wood, whose surface is a little elliptical, to the end of which a small hair brush is nailed, and with a saw-knife, the membranes on each side of the sound must be scraped off. The knife is rubbed upon the brush occasionally, to clear its teeth, the pockets are cut open with scissars, and perfectly cleansed of the mucous matter with a coarse cloth: the sounds are afterwards washed a few minutes in lime-water, in order to absorb their oily principle; and lastly, in clear water. They are then
laid

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laid upon nets, to dry in the air; but, if intended to resemble foreign *Ifinglafs*, the sounds of cod will only admit of that called book, but those of ling both shapes. The thicker the sounds are, the better the *Ifinglafs*, color excepted; but that is immaterial to the brewer, who is its chief consumer.

No. IV.

CATALOGUE OF THE ANIMALS DESCRIBED IN
THIS VOLUME, WITH THEIR BRITISH NAMES.

R E P T I L E S.

1. **C**ORIACEOUS Tortoise, Melwioges.
2. **C** Common Frog, Llyffant melyn.
3. Edible Frog, Llyffant melyn cefn grwm.
4. Toad, Llyffant du, Llyffant dafadenog.
5. Natter Jack.
6. Great Frog.
7. Scaly Lizard.
8. Warty Lizard, Genau goeg ddafadenog.
9. Brown Lizard, frech.
10. Little Lizard, leiaf.
11. Anguine Lizard, naredig.
12. Viper, Neidr, Neidr du, Gwiber.
13. Snake, Neidr fraith, Neidr y tomenydd.
14. *Aberdeen* Snake.
15. Blind-worm, or Slow-worm, Pwl dall. Neidr y defaid.

It is to *Richard Morris*, Esq. that the public is indebted for the *British* names.

F I S H.

F I S H.

- | | |
|----------------------------|----------------------------|
| 16. COMMON Whale, | Morfil Cyffredin. |
| 17. C Pike-headed Whale, | Penhwyad. |
| 18. Fin fish, | Barfog. |
| 19. Round-lipped Whale, | Trwngwrwn. |
| 20. Beaked Whale. | |
| 21. Blunt-headed Cachalot. | |
| 22. Round-headed, | Pengrwn. |
| 23. High-finned, | Uchel aden. |
| 24. Dolphin, | Dolffyn. |
| 25. Porpeffe, | Llamhydydd. |
| 26. Grampus, | Morfochyn. |
| 27. Lamprey, Sea, | Llyfowen bendol, Llamprai. |
| 28. Lesser Lamprey, | Lleprog. |
| 29. Pride. | |
| 30. Skate, | Cath fôr, morcath, Rhaïen. |
| 31. Sharp-nosed Ray, | Morcath drwynfain. |
| 32. Rough Ray. | |
| 33. Fuller Ray. | |
| 34. Shagreen Ray. | |
| 35. Whip Ray. | |
| 36. Electric Ray, | Swithbyfg. |
| 37. Thornback, | Morcath bigog. |
| 38. Sting Ray, | Morcath cefn. |
| 39. Angel fish, | Maelgi. |
| 40. Picked Dog fish, | Ci Pegod, Picewd. |

Z z 2

41. Basking

- | | |
|----------------------------|-----------------------------|
| 41. Basking Shark. | |
| 42. White Shark, | Morgi gwin. |
| 43. Blue Shark, | Morgi glas, y Siere. |
| 44. Long-tailed Shark, | Llwynog mor. |
| 45. Tope, | Ci glas. |
| 46. Spotted Dog fish, | Ci ysgarmes, morgi mawr. |
| 47. Lesser Dog fish. | |
| 48. Smooth Hound, | Ci Llyfn. |
| 49. Porbeagle. | |
| 50. <i>Beaumais</i> Shark. | |
| 51. Angler, common, | Morlyffant. |
| 52. Long Angler, | Morlyffant hir. |
| 53. Sturgeon, | istwrſion. |
| 54. Oblong Diodon, | Heulbyfg. |
| 55. Short Diodon. | |
| 56. Globe Diodon. | |
| 57. Lump Sucker, | Jar-fôr. |
| 58. Unctuous Sucker, | Môr falwen. |
| 59. <i>Jura</i> Sucker. | |
| 60. Longer Pipe fish. | |
| 61. Shorter. | |
| 62. Little, | Mor Neidr. |
| 63. Eel, | Llyfowen. |
| 64. Conger, | Mor Llyfowen, Cyngyren. |
| 65. Wolf fish, | Morflaidd. |
| 66. Launce, | Llamrhiaid, Pyfgod bychain. |
| 67. Morris, | Morys. |
| 68. Sword fish, | Cleddyfbyfg. |
| 69. Dragonet, gemmeous. | |
| | 70. Dragonet, |

- | | |
|------------------------|---------------------------|
| 70. Dragonet, fordid. | |
| 71. Weever, | Mqr wiber, Pigyn astrus. |
| 72. Great Weever. | |
| 73. Common Cod fish, | Codfyn. |
| 74. Hadock, | Hadoc. |
| 75. Whiting Pout, | Cod lwyd. |
| 76. Bib, | Deillion. |
| 77. Poor, | Cwdyn ebrill. |
| 78. Coal fish, | Chwetlyn glas. |
| 79. Pollack, | Morlas. |
| 80. Whiting, | Chwitlyn gwyn. |
| 81. Hake, | Cegddu. |
| 82. Forked Hake. | |
| 83. Left Hake. | |
| 84. Trifurcated Hake. | |
| 85. Ling, | Honos. |
| 86. Burbot, | Llefen, Llefenan. |
| 87. Three bearded Cod. | |
| 88. Five bearded Cod. | |
| 89. Torfk. | |
| 90. Crested Blenny. | |
| 91. Gattorugine. | |
| 92. Smooth Blenny. | |
| 93. Spotted Blenny. | |
| 94. Viviparous Blenny. | |
| 95. Black Goby. | |
| 96. Spotted Goby. | |
| 97. Bull Head, River, | Pentarw, Bawd y melinydd. |
| 98. Armed Bull Head, | Penbwl. |

99. Father

- | | |
|-------------------------|-----------------------------------|
| 99. Father Lasher. | |
| 100. Dorce, | Sion dori. |
| 101. Opah. | |
| 102. Holibut, | Lleden ffreinig. |
| 103. Plaife, | Lleden frech. |
| 104. Flounder, | Lleden 'ddu. |
| 105. Dab, | Lleden gennog, Lleden dwfr croyw. |
| 106. Smear Dab. | |
| 107. Sole, | Tafod yr hydd, Tafod yr ych. |
| 108. Smooth Sole. | |
| 109. Turbot, | Lleden chwith, Torbwt. |
| 110. Pearl, | Perl. |
| 111. Whiff. | |
| 112. Gilt Head, | Pencuryn, Eurben. |
| 113. Red Gilt Head, | Brôm y môr. |
| 114. Toothed Gilt Head, | |
| 115. Wraffe, antient, | Gwrach. |
| 116. Ballan. | |
| 117. Bimaculated. | |
| 118. Trimaculated. | |
| 119. Striped. | |
| 120. Gibbous. | |
| 121. Goldfinny. | |
| 122. Comber. | |
| 123. Cook. | |
| 124. Perch, common, | Perc. |
| 125. Basse, | Draenog, Gannog. |
| 126. Sea Perch. | |
| 127. Ruffe. | |

128. Black

128. Black Ruffe.	
129. Three spined Stickleback,	Sil y dom, Pysgod y gath.
130. Ten spined,	Pigowgbyfg.
131. Fifteen spined,	Silod y môr.
132. Mackrel, common,	Macrell.
133. Tunny,	Macrell Sopaen.
134. Scad.	
135. Red Surmullet,	Hyrddyn coch.
136. Striped Surmullet.	
137. Grey Gurnard,	Penhaiarn llwyd, Penhaiernyn.
138. Red Gurnard,	Penhaiarn coch.
139. Piper,	Pibyd.
140. Sapphirine Gurnard,	Ysgyfarnog y môr.
141. Streaked Gurnard.	
142. Loche, bearded,	Crothell yr afon.
143. Salmon,	Gleisfiedyn, Eog, Maran <i>Taliesin</i> .
144. Grey,	Penllwyd, Adfwlch.
145. Sea Trout.	
146. Trout.	Brithyll.
147. White Trout.	
148. Samlet,	Brith y gro.
149. Charr,	Torgoch.
150. Grayling,	Brithyll rheftrog, Glasgangen.
151. Smelt,	Brwyniaid.
152. Gwiniad,	Gwiniedyn.
153. Pike,	Penhwyad.
154. Gar Pike,	Môr nodwydd, Corn big.
155. Saury Pike.	
156. Argentine.	

157. Atherine.

157. Atherine.	
158. Mullet,	Hyrd dyn, Mingrwn.
159. Flying Fish.	
160. Herring,	Pennog, ysgaden.
161. Pilchard,	Pennog mair.
162. Sprat,	Coeg Bennog.
163. Anchovy.	
164. Shad,	Herlyn, Herling.
165. Carp,	Carp, Cerpyn.
166. Barbel,	Barfbysg, y Barfog.
167. Tench,	Gwrachen, Isgretten.
168. Gudgeon,	Crothel.
169. Bream,	Brém.
170. Rud,	Rhuddgoch.
171. Crucian.	
172. Roach,	Rhyfell.
173. Dace,	Darsen, Golenbysg.
174. Graining.	
175. Chub,	Penci, Cochgangen.
176. Bleak,	Gorwynbysg.
177. Minow,	Crothel y dom, Bychan bysg.
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 180. Beardless Ophidium.

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ERRATA.

Page 5, line 15, for *Carulæ* read *Carulæ*. P. 6, l. 1, for naturalists read naturalist. P. 8, l. 6, for twelve read eleven. P. 13, l. 1, last, for swelling read swelling. P. 14, l. 11, for horor read hor-
ror. *Ibid.* l. 15, for intrails read entrails. P. 21, l. 6, for occasioned read occasioned. P. 23, l. 16,
for slightly read slightly. P. 51, l. 11, for penniformi read pinniformi. P. 69, note, for *tripatium*
read *tripatium*. *Ibid.* for appellabatur, summa & read appellabatur summa &. P. 70, l. 4, for
Lampetra read Lampetra. P. 75, l. 7, for thire of read thire of *Refs.* P. 76, l. 8, for spiny read
spiny. P. 77, l. 3, (*and passim*) for encreases read increases. P. 78, l. 18, for *u* read *ui*. P. 79, l.
25, for acknowledgements read acknowledgements. P. 86, l. 18, for in read is. P. 92, l. 28, for
sedement read sediment. P. 100, note, for 130 read 154. P. 113, l. 12, for *αἰσχρογαστρίων* read
αἰσχρογαστρίων. P. 124, l. 19, for serpentinum read serpentinus. P. 163, l. 10, for nuisance read
nuisance. P. 178, l. 22, for favoured read favored. P. 184, l. 32, for lasts read last. P. 185, l. 12,
for rest read rays. P. 188, l. 1, and 203, l. 16, for sappharine read sapphirine. P. 189, l. 10, for
alepedotus read alepidotus. P. 190, l. 7, for verrucoso read verrucis. P. 209, l. 8, for on the side
read on the left side. P. 220, l. 19, for exceed read exceed. P. 223, margin, for XXVI read XXVII.
P. 242, l. 8, for vario read varia. P. 246, l. 19, for Mullia read *Mullus*. P. 251, l. 11, for *Aber-
glaslyn* read *Aberglaslyn*. P. 253, l. 7, for back, fin, read back-fin. P. 288, l. 10, for radiate read
radiata. P. 294, l. 19, for never read very rarely. P. 311, l. 10, for this read the. P. 314,
last line, for Mr. Diaper read Moses Browne. P. 337, l. last, for *fatidi* read *fatidæ*.

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OF THE

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